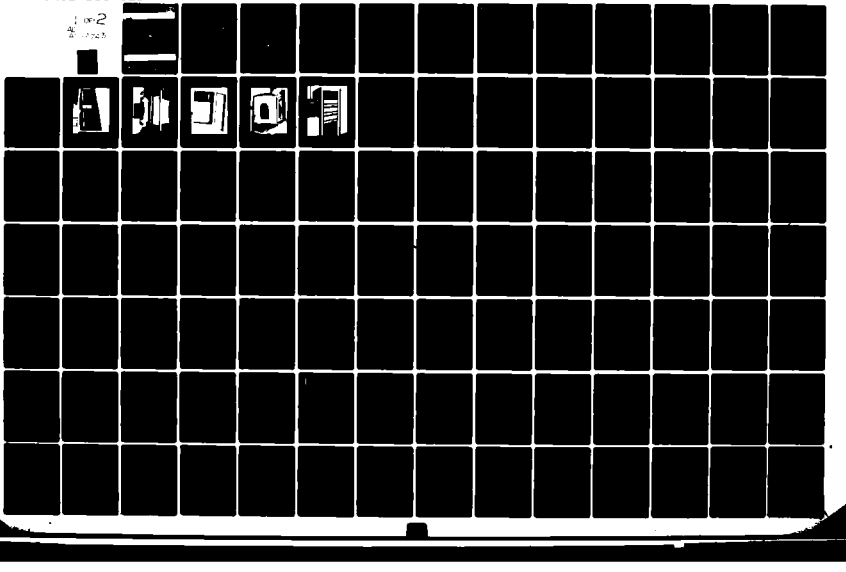
AD-A097 743 JOHNS HOPKINS UNIV LAUREL MD APPLIED PHYSICS LAB F/G 15/6
NAVAL NUCLEAR WARFARE SIMULATION OPERATOR'S MANUAL.(U)
MAR 81 N K BROWN, R R GUENTHER, P A JAFFRAY N00024-81-C-5301

UNCLASSIFIED NL



LEVEL

Cy. #38

5

NAVAL NUCLEAR WARFARE SIMULATION OPERATOR'S MANUAL

AD A096 743

APR 1 5 1981

A

This document has been approved for public release and sale; its distribution is unlimited.

STRATEGIC AND THEATER NUCLEAR WARFARE DIVISION

DTIC FILE

81 3 16 058

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE	READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO. AD-A097743	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Naval Nuclear Warfare Simulation Operator's Manual.	5. TYPE OF REPORT & PERIOD COVERED Technical Report,
	6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) N.K. Brown, R.R. Guenther, P.A. Jaffray	8. CONTRACT OR GRANT NUMBER(s) N00024-81-C-5301
9. PERFORMING ORGANIZATION NAME AND ADDRESS Johns Hopkins University Applied Phys Lab--Chem Prop Inf Agy Johns Hopkins Rd, Laurel, MD 20810	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS C4A0/FP6
11. CONTROLLING OFFICE NAME AND ADDRESS Naval Plant Representative Naval Plant Rep Ofc; Johns Hopkins Rd Laurel, MD 20810	12. REPORT DATE MAR 81
	13. NUMBER OF PAGES
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office) Commander Naval Air Sys Comd (NAIR-330) Washington, DC 20361	15. SECURITY CLASS. (of this report) UNCLASSIFIED
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

NNWS
Naval Warfare Engagements
Campaign Models
Interactive War Games
Tactical Nuclear Warfare
Computer Simulation Operating Procedures

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The Naval Nuclear Warfare Simulation (NNWS) Operator's Manual is a procedures manual for operating NNWS hardware and software. It contains procedures for computer start-up; program initiation, operation shut-down and restart; data base maintenance and backup file creation; and error recovery. It also summarizes the possible player actions during the simulation game with procedures for using the NNWS player displays, and the scheme for player interface with the simulation.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE
S/N 0102-014-6601

UNCLASSIFIED C-14
SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

NAVAL NUCLEAR WARFARE SIMULATION
OPERATOR'S MANUAL

STRATEGIC AND THEATER
NUCLEAR WARFARE DIVISION

CHANGE RECORD

CHANGE NO.	DATE	TITLE OR BRIEF DESCRIPTION	ENTERED BY

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF TABLES

LIST OF EFFECTIVE PAGES

The total number of effective pages in this document is 112, consisting of the following:

Page	Status	Page	Status
Title page	Original		
ii through viii	Original		
1-1 and 1-2	Original		
2-1 through 2-10	Original		
3-1 through 3-86	Original		
DL-1 through DL-4	Original		

Section 1

INTRODUCTION

NAVAL NUCLEAR WARFARE SIMULATION CONCEPT

The Naval Nuclear Warfare Simulation (NNWS) is a software system designed to simulate theater-wide naval conflict over an extended period of time. The simulation is capable of modeling naval campaigns with a duration of several months in simulated time, has virtually no limit of the number of units and interactions simulated, and allows for the modeling of the human decision-making element through interactions with players of the simulation.

NNWS utilizes a large scale IBM computer to model the actions and encounters of a campaign through stochastic algorithms dependent on system and platform effectiveness parameters that can also vary as a function of environment and tactical situation. Interaction with the simulation is accomplished from minicomputer-controlled player stations. The players direct employment of assets through composed orders generated at the player stations. Knowledge of campaign status and actions is provided by reports generated by the simulation and subsequently processed and displayed at the player stations.

The NNWS simulation is played in three to four hour sessions, each encompassing several days of simulated time. At the end of each session, the simulation status is preserved so that the next session can be resumed as if there were no interruption. This suspend and restart capability also allows the analyst to play multiple replications from the same point within a scenario, testing sensitivity to tactical responses or systems effectiveness parameters.

NNWS TEAMS

Each player station is manned by a team consisting of a Player and an Operator. The Player assumes the responsibility of a Naval Theater Commander. He is responsible for continually assessing the game situation and making decisions regarding allocation of forces and initiation of engagements. The Player is responsible for the theory of the game.

The Operator is responsible for the mechanics of the game. He supports the Player by providing the available situation and status displays to aid the Player in decision making and by formulating, entering, and transmitting Player's orders. The Umpire Operator, in addition to supporting Umpire actions, is responsible for initiating PDP 11/XX system operation, establishing game play, monitoring system operation, and conducting system startup, shutdown, and error recovery procedures.

SCOPE OF DOCUMENT

This manual is intended for use by NNWS Operators. It contains a description of the NNWS and provides the procedures and additional information required by the Operators to fulfill their assigned tasks. Table 1-1 provides a list of abbreviations and acronyms used in this manual.

Table 1-1. ABBREVIATIONS AND ACRONYMS

ADR	Automated Decision Rules
APL	Applied Physics Laboratory
ASW	Anti-Submarine Warfare
CAU	Crypto Auxiliary Unit
CROSSREFTABLE	Cross Reference Table
DEC	Digital Equipment Corporation
DEFCON:L	Defense Condition: Low Level
DEFCON:H	Defense Condition: High Level
DEFCON:W	Defense Condition: War Level
DSL	Diesel Submarine
FCC	Fleet Command Center
JHU/APL	Johns Hopkins University/Applied Physics Laboratory
NNWS	Naval Nuclear Warefare Simulation
P:E	Precedence: Emergency
P:F	Precedence: Flash
P:O	Precedence: Immediate
PIM	Position and Intended Movement
P3-A/B(C)	Class of airplane
ROM	Read Only Memory
S:A	Searchtype: Area
S:B	Searchtype: Barrier
SLBM	Submarine Launched Ballistic Missile
SPA	SOSUS Probability Area
SOSUS	Sound Surveillance System
SS	Diesel Submarine
SSB	Ballistic Missile Diesel Submarine
SSBN	Ballistic Missile Nuclear Submarine
SSG	Guided Missile Diesel Submarine
SSGN	Guided Missile Nuclear Submarine
SSN	Nuclear Submarine
SUB	Submarine
SURF	Surface Unit
SURTASS	Surveillance Towed Array Sensor System
TAR	Tactical Action Rules
TC	Theater Commander
TSO	Time-Sharing Option
VP	Maritime Patrol Aircraft
VP STREAM	Patrol Aircraft Group

Section 2

DESCRIPTION

NNWS SYSTEM DESCRIPTION

The NNWS consists of RED, BLUE, and UMPIRE stations and an IBM 3033 computer. The RED and BLUE stations provide for the associated Team's interaction with the game simulation. Each station contains a VT-100 Alphanumeric Terminal and a MEGATEK Graphic Scope. The RED station also contains a Power Distribution Panel for the Player and UMPIRE stations.

The UMPIRE station provides for the UMPIRE Team's control and monitoring of NNWS system operation. The UMPIRE station contains a DEC PDP 11/XX Minicomputer, two DEC RK-0X Disk Cartridge Drives, a DECWRITER II Operator Terminal, a VERSATEC 1160A Printer/Plotter, a VT-100 Alphanumeric Terminal, a MEGATEK Graphic Scope, and three MEGATEK 7000 Graphic Controllers.

In addition, an IBM 3033 computer is located at JHU/APL. It serves as a host computer for the NNWS game simulation. Figure 2-1 provides a typical layout of NNWS equipment.

EQUIPMENT DESCRIPTION

The following paragraphs provide a brief description of each individual equipment in the NNWS.

IBM 3033 COMPUTER. The IBM 3033 Computer is a general purpose IBM computer. It carries out game simulation, monitors for occurrence of critical events and generates interrupts and system error messages. The Computer utilizes a time shared NNWS Simulation Model program and a TSO Session program.

DEC PDP 11/XX MINICOMPUTER. The DEC PDP 11/XX Minicomputer, figure 2-2, is a general purpose computer that carries out executive, communication, graphics processing, and data base update functions. It serves as the interface between the three stations and the IBM 3033 and as the software control for the Alphanumeric Terminals and the Graphic Scopes. The Minicomputer Front Panel contains the power and operating switches and indicators.

DEC RK-0X DISK DRIVES. The two DEC RK-0X Disk Drives, figure 2-2, referred to in Section 3 as Disk Drive 0 and 1, provide direct access memory to the Minicomputer. Disk Cartridges within each Drive contain RSX-11M operating system software, MEGATEK graphics software, game data, and information files. Operating controls and indicators are located on the Disk Drive Front Panel.

DECWRITER II OPERATOR TERMINAL. The DECWRITER II Operator Terminal, figure 2-3, serves as the console for Umpire Operator interaction with the Minicomputer. The Operator Terminal keyboard contains the power and operating switches and indications.

VERSATEC 1160A PRINTER/PLOTTER. The VERSATEC 1160A Printer/Plotter serves as line printer for the Minicomputer and as a plotter to produce hard copies of Graphic Scope displays. The power and operating switches and indicators are located on the Printer/Plotter Orange Panel.

DEC VT-100 ALPHANUMERIC TERMINALS. The three DEC VT-100 Alphanumeric Terminals, figure 2-4, provide for Player and Umpire Operators interaction with the game simulation through display of reports and generation of orders. Each team's Alphanumeric Terminal displays Host Computer generated status information in the form of reports and provides for the formulation and transmission of Player's inputs in the form of orders. The power switch is located on the left rear of the Alphanumeric Terminal. The Alphanumeric Terminal Keyboard contains the operating keys and indicators.

MEGATEK GRAPHIC DISPLAY SCOPES. The three MEGATEK Graphic Display Scopes, figure 2-5, provide a theater wide situation map containing the identities and plotted positions of all friendly and detected enemy units. The situation map is updated each interrupt and a variety of routines are enabled to aid the Players in generating orders. A hard copy of the situation map may be obtained on the Printer Plotter. The power switch is located on the right rear of the Graphic Scope. Operating keys and a joy-stick are located on the Graphic Scope Front Panel. INTENSITY and FOCUS knobs and the power indicator are located above the display screen.

MEGATEK 7000 GRAPHICS CONTROLLERS. The three MEGATEK 7000 Graphics Controllers, figure 2-6, drive the Graphic Scopes. The three Graphics Controllers are mounted together in a free standing cabinet with a common power switch on the bottom rear of the cabinet. Power indicators are located on the front of each Graphics Controller.

NNWS PLAYING ENVIRONMENT

NNWS Campaigns are played in multiple sessions. Each session is three to four hours in duration and spans up to several days of simulated time. The session begins with the umpire operator initiating inter-computer communications, starting or resuming the simulation, and enabling the player functions for their respective stations.

A session itself consists of an indeterminate number of turns or cycles, each marked by an interrupt giving both sides an opportunity to receive reports and issue orders. The frequency of the interrupts is controlled by two parameters that are entered by the umpire at the beginning of each session and by the events that occur within the simulation.

A session terminates normally with an ordered halt by the umpire. The simulation and all player functions are terminated. The status of all stations and all the simulated units and systems is preserved enabling play to be resumed at the next session, as if it had never been disrupted.

On occasion, a session may terminate involuntarily because of a hardware, software or data transmission error. In such cases, the game is resumed as of the last available interrupt. Depending on the cause of termination, the resumption of the game will occur at the current interrupt, the previous interrupt or the interrupt corresponding to the beginning of the session.

NNWS SOFTWARE ENVIRONMENT

NNWS consists of a minicomputer driven display system and a large main frame computer on which the engagements, events and processes are simulated. Both portions of the simulation have their own software systems with a collection of computer programs, databases and execution procedures. The NNWS player uses both systems. The display system gathers and analyzes reports from the simulated events and processes, and provides the information to generate orders. Order generation is the means of player control over the simulation. Figure 2-7 provides a diagram of NNWS information flow.

The reports/orders scheme requires that each system have two modes, active and passive, and while each system is active its counterpart must be passive. With the IBM 3033 simulation system active, reports are collected up to the simulated time of the next mode change (called interrupt time). The reports are then transmitted to the player stations. The simulation is then suspended, the Minicomputer display system becomes active, and the players view the reports and issue orders for the next simulation cycle.

The process originates on the Minicomputer with installation of the data communications programs and the umpire's executive program. The operator at the umpire's station then establishes communications with the IBM 3033 and performs initialization of the simulation by loading the scenario database and on-line NNWS system performance databases and setting the session parameters.

Upon starting the simulation, the first interrupt occurs immediately in terms of simulation time. This activates the Minicomputer display system, initializes the player databases and presents an opportunity to issue orders to the units being simulated. After each player has transmitted his set of orders, the Minicomputer enters passive mode. The players can continue to review their information, but cannot issue orders.

The simulation on the IBM 3033 becomes active and advances to the next interrupt time. Reports are transmitted and the process is repeated until the umpire orders a halt in play.

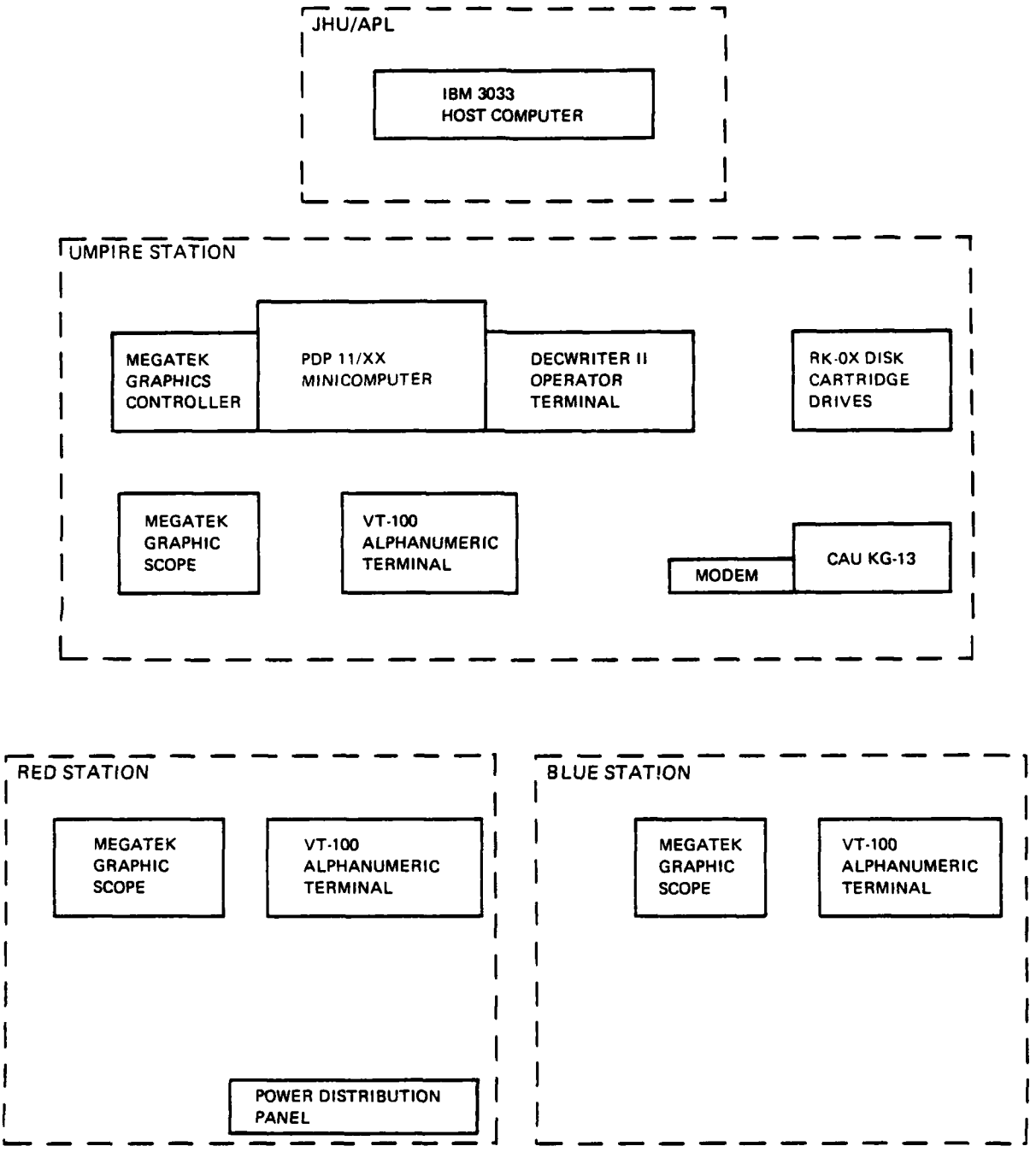


Figure 2-1. NNWS EQUIPMENT LAYOUT

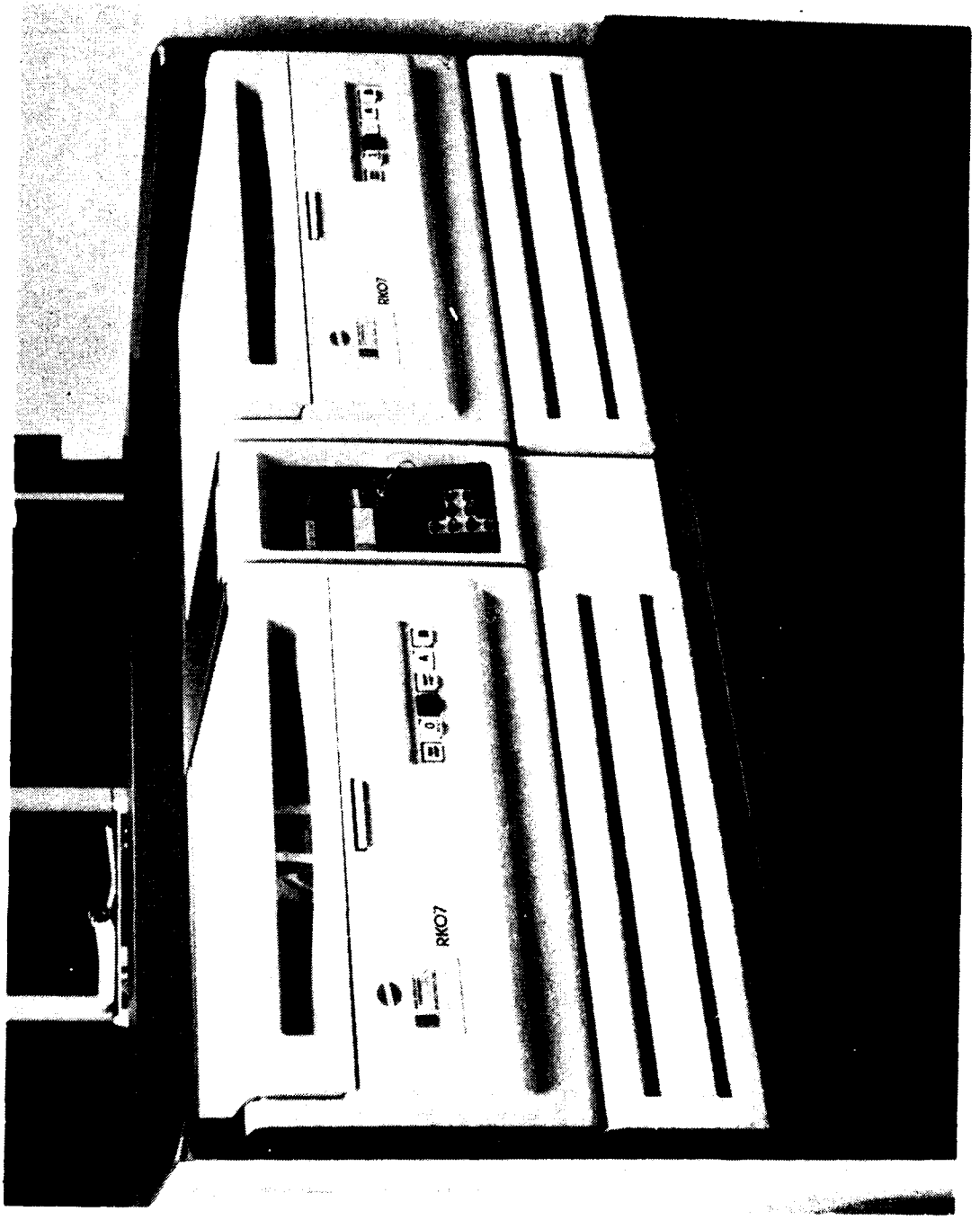


Figure 2-2. MINICOMPUTER AND DISK DRIVES (TYPICAL)

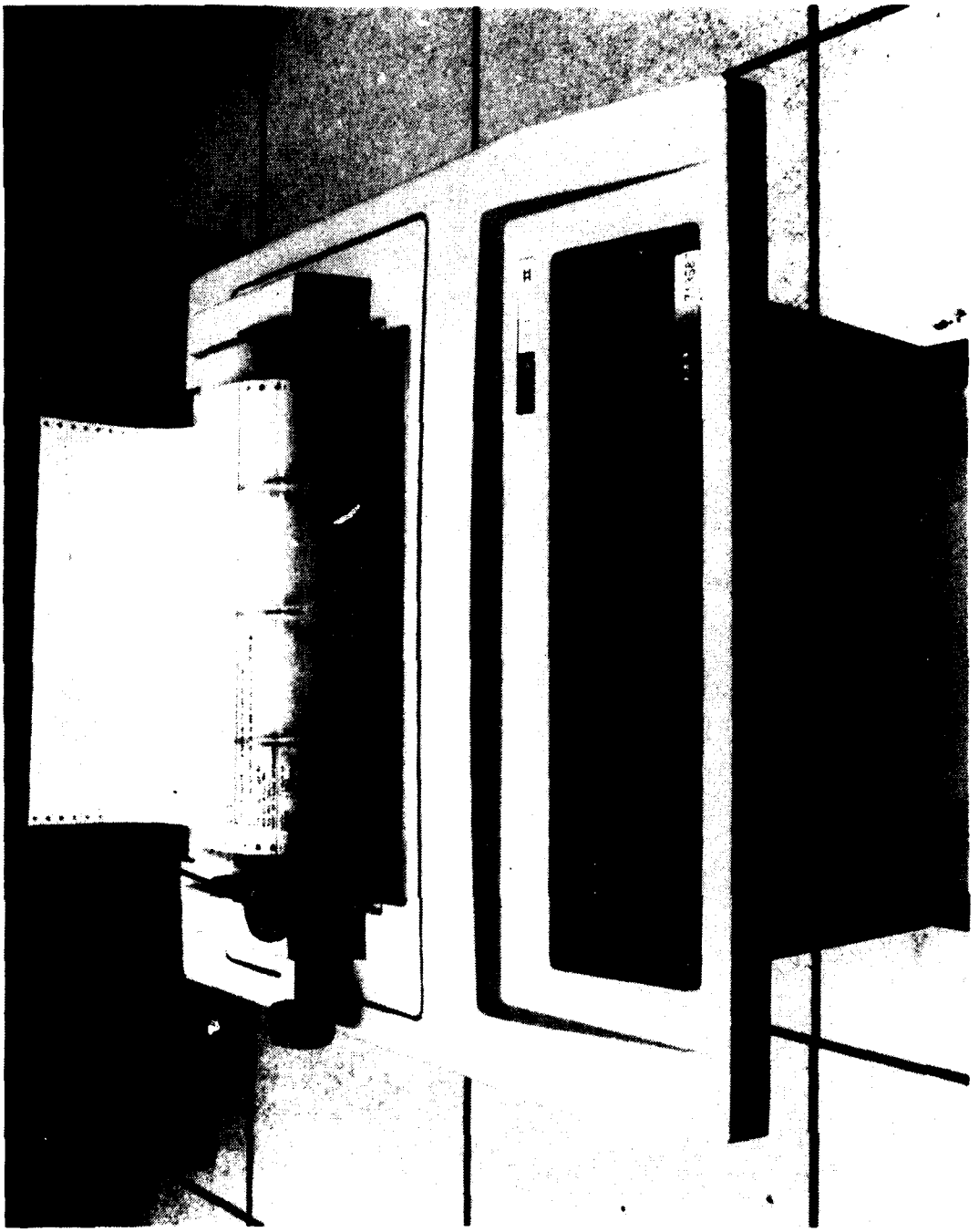


Figure 2-3. OPERATOR TERMINAL

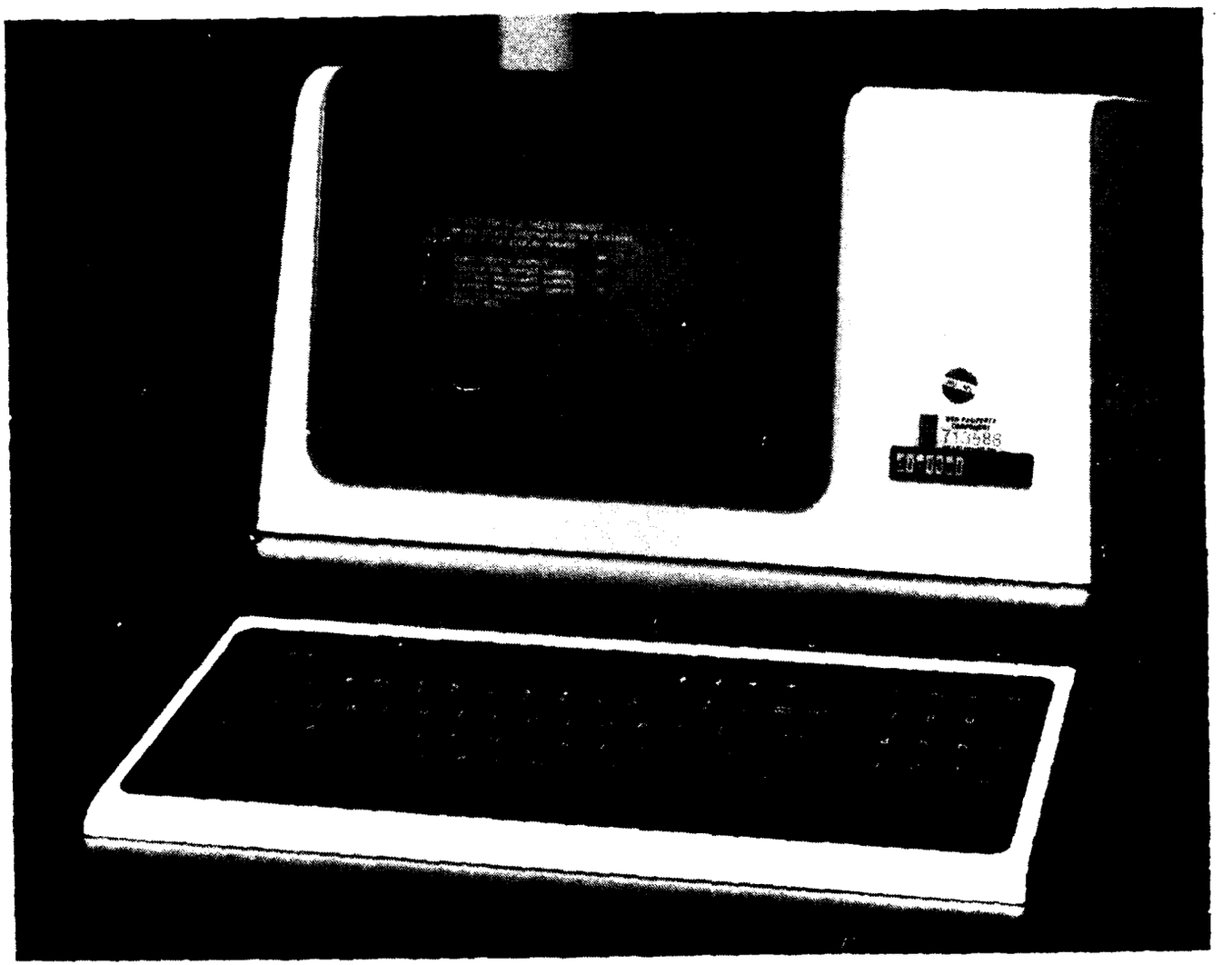


Figure 2-4. ALPHANUMERIC TERMINAL

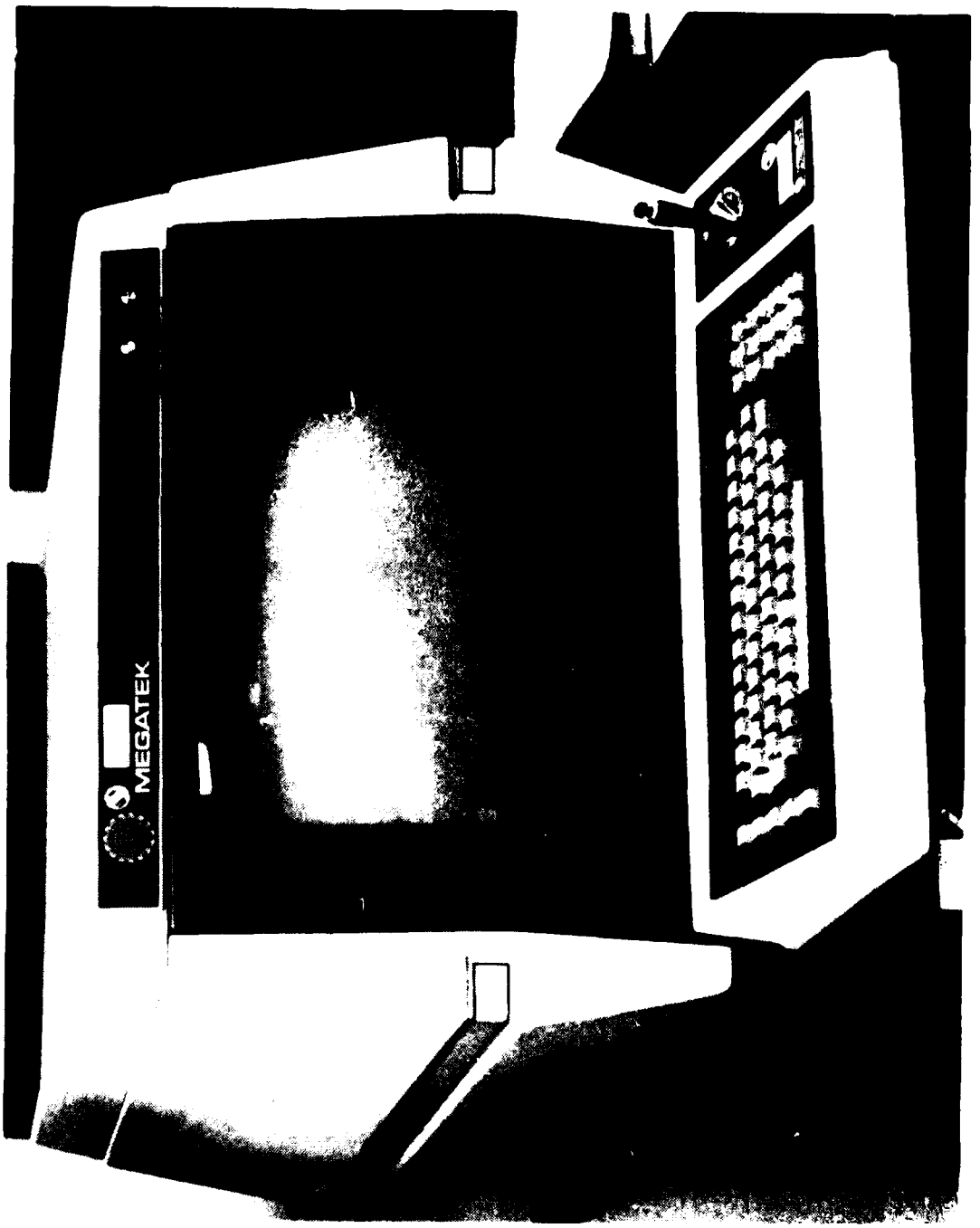


Figure 2-5. GRAPHIC SCOPE

Figure 2-6. GRAPHICS CONTROLLERS

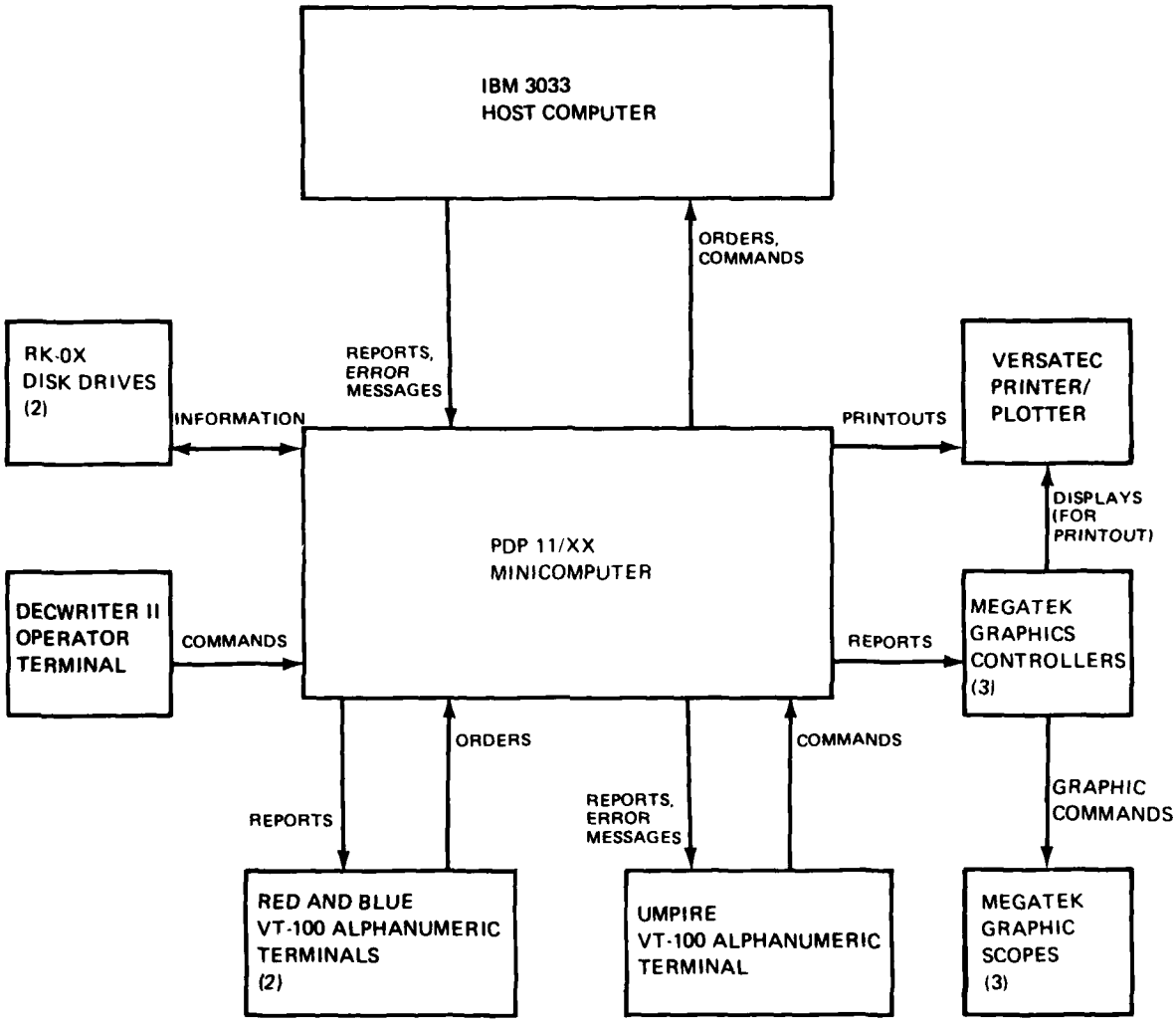


Figure 2-7. NNWS INFORMATION FLOW

3.1 POWER TURN-ON

POWER TURN-ON

NOTE

If expected printout/display does not occur or contains errors, and no operator recovery procedure is provided, contact APL NNWS Programming Personnel

1. At RED Station Power Distribution Panel, place circuit breakers 1, 3, 4, 5, 6, 7, 8, 10, 12, 14 and 16 to ON.

2. Apply power to MEGATEK 7000 Graphics Controller as follows:

   A. At bottom rear of Graphics Controller cabinet, place AC POWER Toggle switch UP.

   B. Verify each Graphics Controller Front Panel indicator is lit WHITE.

3. Apply power to three MEGATEK Graphic Scopes as follows:

   A. At right rear of each Graphic Scope, place Power switch DOWN.

   B. Verify each Graphic Scope Front Panel Power indicator is lit ORANGE.

   C. Verify INTENSITY knob is above midrange for each Graphic Scope.

4. Apply power to VERSATEC Printer/Plotter as follows:

   A. At Printer/Plotter Orange Panel, depress Power (topmost) Actuator/ Indicator.

   B. Verify Actuator/Indicator is lit WHITE.

   C. Verify Paper Supply (RED) indicator is OUT.

NOTE

If Paper Supply indicator is lit RED, replenish paper in accordance with instructions located inside hinged Front Panel

   D. Open hinged Front Panel.

   E. Depress RESET pushbutton.

   F. Close hinged Front Panel.

5. Apply power to three VT-100 Alphanumeric Terminals as follows:

   A. At left rear of Alphanumeric Terminal, place Power switch UP.

   B. Verify power-up audio "beep" occurs.

   C. Verify Alphanumeric Terminal Keyboard Indicator Panel ON LINE indicator is lit RED.

   D. Verify CAPS LOCK key is DOWN.

NOTE

To ensure accurate alphanumeric display, wait 30 seconds before proceeding to Step E

   E. At Keyboard, depress SET-UP key.

   F. At Keyboard, depress 5 key.

   G. Verify Alphanumeric Terminal bottom line displays:

1 0101 2 1101 3 0100 4 0010 T SPEED 9600 R SPEED 9600

NOTE

If display cannot be verified, refer to VT-100 manual for additional instructions

   H. At Keyboard, depress SET-UP key.

   I. Repeat Steps A through H for other two Alphanumeric Terminals.

6. Apply power to RK-0X Disk Cartridge Drives as follows:

   A. Verify the following Disk Drive 0 and 1 Front Panel switch conditions:

Switch	Position	Illumination
RUN/STOP	OUT	lit YELLOW
READY	OUT	not lit
WRITE/PROT	OUT	not lit
A	IN	
B	OUT	

   B. Obtain disk cartridges labeled "NNWS SYSTEM" and "NNWS DATABASE".

NNWS OPERATOR
PROCEDURE 3.1

NOTES

1. Disk Drives hinged top lid can only be opened when power is applied.

2. Loading instructions are located inside the Disk Drive hinged Front Panel.

C. Load "NNWS SYSTEM" cartridge in Disk Drive 0.

D. Load "NNWS DATABASE" cartridge in Disk Drive 1.

E. Depress RUN/STOP switch.

NOTE

Wait 15 to 30 seconds for Disk Drive spin-up prior to performing Step F

F. Verify the following Disk Drive 0 and 1 Front Panel switch conditions:

Switch	Position	Illumination
RUN/STOP	IN	not lit
READY	OUT	lit WHITE
FAULT	OUT	not lit
WRITE/PROT	OUT	not lit
A	IN	
B	OUT	

7. Apply power to DECWRITER II Operator Terminal as follows:

A. At Keyboard upper left corner, place Power (Rocker) switch to ON(1).

B. Verify position of following Keyboard Switches:

Switch	Position
BAUD RATE 110	UP
BAUD RATE 300	DOWN
LINE/LOCAL	UP
FDX	UP
ALT CHAR SET	UP
CHAR SET LOCK	DOWN
AUTO LF	DOWN
HERE IS	UP
CAPS LOCK	DOWN

C. Verify Keyboard STD CHAR indicator is lit RED.

D. Verify PAPER OUT (RED) indicator is not lit.

E. Verify paper supply stock is at least one inch thick.

NOTE

If PAPER OUT indicator is lit RED or paper supply is less than one inch thick, load paper in accordance with NNWS Operator Procedure 3.6

8. Apply power to PDP 11/XX Minicomputer as follows:

A. At Minicomputer Front Panel, rotate Power knob to RUN position.

B. Verify DC ON indicator is lit RED.

9. Load operating system software as follows:

A. At Minicomputer Front Panel, depress and hold CNTRL pushbutton.

B. Depress BOOT pushbutton.

C. Simultaneously release CNTRL and BOOT pushbuttons.

D. At Operator Terminal verify one line of four six-digit numbers and a $ sign on the second line is printed.

EXAMPLE:
```
070730      000024      000716      003632
$
```

E. At Operator Terminal, enter DM

F. At Operator Terminal,verify the following printout occurs:

```
  RSX-11M V3.1 BL22    124K     MAPPED
>RED DMO:=SYO:
>RED DMO:=LBO:
>MOU DMO:RSX11MBL22
>@ [1, 2] STARTUP
>; RSX11M VERSION 3.1 autopatched 19-april-79 by DEC
>; +512. byte DRVPAR, +1024. byte POOL space, by NKB
>; 4096, byte MEGCOM partit. add. 27-may-1979 by NKB
>; post-boot load of GX: & GP:  21-JUN-1979 by NKB
>* MUST ENTER TIME, DATE (HR:MN DD-MMM-YY) [S]:
```

G. At Operator Terminal, enter time and date in the following order:

HR:MN DD-MMM-YY

EXAMPLE: 13:15 09-DEC-80

H. At Operator Terminal, verify the following printout occurs:

```
>TIM HR:MN DD-MMM-YY
>ACS DMO:/BLKS=500.
>MOU DM1:/OVR
>ACS DM1:/BLKS=1000.
>SET /MAXEXT=16.K
>RUN ERRLOG
>INS  [1,54]  SFT/TASK=...SFT
 ERL -- ERROR LOG INITIALIZED
>LOA GX:/PAR=DRVPAR
>LOA GP:/PAR=DRVPAR
>SET /UIC= [7,42]  !  SET UP FOR NNWS GAME EXECUTION
>@ <EOF>
>
```

I. Verify TIM (top) line contains correct time and date.

NOTE

If TIM (top) line is inaccurate, re-enter correct time and date per Steps J, K, and L

J. Enter TIM (HR:MN DD-MMM-YY)

EXAMPLE: TIM 13:15 09-DEC-80

K. Enter TIM

L. Verify correct time and date is printed.

3.2 INITIAL START-UP

INITIAL START-UP

NOTES

1. This procedure is for starting the NNWS application at game time equal to zero. If NNWS is to be started at game time other than zero, refer to NNWS Operator Procedure 3.5.

2. If expected printout/display does not occur or contains errors, and no operator recovery procedure is provided, contact APL NNWS Programming Personnel.

1. Verify NNWS Power Turn-On has been completed in accordance with NNWS Operator Procedure 3.1.

2. Initialize Files from Operator Terminal as follows:

   A. Enter SET /UIC= [7,42]

   B. Enter @FILEINIT

   C. After approximately 15 minutes, verify the following printout occurs:

      INIT IS NOW COMPLETE

3. Load NNWS Application Software from Operator Terminal as follows:

   A. Enter @NNWS

   B. After approximately 10 minutes, verify the following printout occurs:

      > @ <EOF>

   C. Verify all lines have leading > character.

   D. Retain printout as a system configuration log.

4. Initiate Umpire's Alphanumeric Terminal from Operator Terminal as follows:

   A. Verify the following printout has occurred:

      IS THE GAME UMPIRE TERMINAL (TT2:) AVAILABLE? (T or F)

   B. Enter T

5. Initiate communications with Host Computer from Umpire's Alphanumeric Terminal as follows:

NOTE

Use DELETE key to erase entries

A. At Crypto Auxiliary Unit (CAU) verify Terminal Isolation Switch is in APL/JHU.

B. Sync CAU and Cryptographic Unit (KG-13).

C. At Modem unit verify ON and CO indicators are lit RED.

D. Verify the following display has occurred:

IS NNWS TO COMMUNICATE INTER-PROCESSOR? (T or F)

E. Enter T

F. Verify the following display has occurred:

enter LOGON USERID/PASSWORD SIZE ( )
EXEC model, answer queries, then depress CTRL Z

G. Enter LOGON OP65 SIZE(4096)

H. Verify prompt display for account number and password.

NOTE

If prompt does not occur, repeat Step G

I. Enter account number and password.

J. Verify the following display has occurred:

OP65 logon in progress at (Time) on (Date)
Availability: Mon-Fri--8:30 a.m. to midnight,
Sat.--8:30 to 4:30 p.m.

USERPROC CMDPROC
FREE FILE(SYSUDUMP)
READY

NOTE

If READY display does not occur, repeat Step I

6. Initiate NNWS Application on Host Computer from Umpire's Alphanumeric Terminal as follows:

NOTE

Refer to Table 3-1 for explanation and listing of operand list

A. Enter NNWS [operand list].

B. Verify a single line of four values separated by commas is displayed.

EXAMPLE: S, A, OND, LANT

C. Observe prompt for password.

D. Enter password.

NOTE

CNTRL Z entry (Steps F and G) must be made within 5 seconds after CNTRL Z prompt

E. Repeat Steps C and D for each additional prompt until the following prompt occurs:

ENTER CNTRL Z NOW

F. Depress and hold CTRL key.

G. Depress Z key.

H. Simultaneously release CTRL and Z keys.

I. Verify the following display has occurred:

ENTER MAP PROJECTION FILE NAME - up to 9 chars.

J. Enter Map Projection File.

NOTE

Continually monitor Umpire's Alphanumeric Terminal for unsolicited system messages from the host computer. All such messages will be preceded by the characters "TSO:". If a message is displayed, notify the Umpire and APL NNWS Programming Personnel and refer to NNWS Operator Procedure 3.3 Part 3.

7. Initiate RED and BLUE Alphanumeric Terminals from Umpire's Alphanumeric Terminal as follows:

   A. Verify the following display has occurred:

      Are the RED and BLUE TEAMS available? (T or F)

   B. Enter T

8. Initiate game play as follows:

   A. At Umpire's Alphanumeric Terminal, verify 21 function menu is displayed.

   B. At RED and BLUE Alphanumeric Terminals, verify Alpha Menu is displayed.

   C. At RED and BLUE Graphic Scopes, verify initial situation map is displayed.

   D. At Umpire's Alphanumeric Terminal, enter 20

   E. At Operator Terminal, verify the following printout has occurred:

      ORDRS SENT @ (Time)

3.3 GAME PLAY

GAME PLAY

The RED and BLUE Operators are responsible for generating the specific reports required by their respective Players and for entering and transmitting Player orders during game interrupts. The Umpire Operator is responsible for monitoring and verifying system operation and for detecting and correcting system and transmission errors.

To aid the operators in performing their required tasks, this procedure is divided into three parts as follows:

Part 1 PLAYER REPORTS
Part 2 PLAYER ORDERS
Part 3 UMPIRE CONTROL AND MONITORING

Parts 1 and 2 contain the information required by the RED and BLUE Team Operators to generate the reports and orders and provide definitions to translate the symbology into meaningful data for the player. Part 3 contains the information, actions, and error recovery procedures required by the Umpire Operator during the game.

NNWS OPERATOR
PROCEDURE 3.3

PART 1
PLAYER REPORTS

NOTES

1. This procedure is not to be used if Umpire has directed to forego receipt of reports.

2. If reports are desired at a time other than a game interrupt, proceed to Step 7.

1. At RED (BLUE) Alphanumeric Terminal, verify the follow display has occurred:

   NEW REPORTS RECEIVED

2. Depress RETURN key.

3. Verify Alphanumeric Terminal displays Event Reports Summary. (Refer to Table 3-3 for an explanation of these reports).

4. Verify Graphic Scope displays an updated situation plot. (Refer to Table 3-8 for a summary of NNWS graphical display symbols).

NOTE

Displays that have geographical coordinates off the current map are not plotted

5. Verify Alphanumeric Terminal displays Alpha Menu (Table 3-2).

6. Verify Graphic Scope displays the following Graphic Menu beneath the theater map.

   INPUT P, T, D, F, S, A, 9 (TEMP, TRK, DST, FLD, SUB/SURF, AC, QUIT)

7. Generate reports on Alphanumeric Terminal as follows:

   A. Select desired report option from Alpha Menu items 01 through 05.

   B. Enter corresponding menu option number.

   C. Verify desired report is displayed. (Refer to Table 3-4 for explanation of reports.)

8. Generate graphic displays as follows:

NOTES

1. The Graphics Menu is enabled during game interrupts only.

2. Refer to Table 3-9 for explanation and operation of Graphic displays.

3. Perform Step A only if a hard copy of current display is desired.

A. Depress COPY key and wait until hard copy is completed.

B. Select desired option from Graphics menu.

C. Enter corresponding menu item letter.

D. When no additional graphic displays are desired, enter 9.

PART 2
PLAYER ORDERS

NOTE

This procedure is to be used during game interrupts only

1. At RED (BLUE) Alphanumeric Terminal, verify the Alpha Menu is displayed (Table 3-2).

2. Generate orders on Alphanumeric Terminal as follows:

   A. Select desired order option from Alpha Menu items 06 through 19.

   B. Enter corresponding menu option number.

   C. Verify desired order format is displayed. (Refer to Table 3-6 for use, format, and order element description).

   D. Depress RETURN key with no data entered (null entry) to return to Alpha Menu.

3. After all orders have been entered and verified, transmit orders as follows:

   A. If not previously accomplished at Graphic Keyboard, enter 9.

   B. Verify Graphic Scope displays the following below the map:

      SITRD (SITBL) JOY-KEY OFF

   C. At RED (BLUE) Alphanumeric Terminal, enter 20

PART 3
UMPIRE CONTROL AND MONITORING

1. Verify Operator Terminal prints REPTS RECV @ (Time).

2. Verify Umpire's Alphanumeric Terminal displays NEW REPORTS RECEIVED.

3. If directed by Umpire, inform RED and BLUE Teams to forego receipt of reports.

4. Depress RETURN key.

5. Verify Umpire's Alphanumeric Terminal displays raw data received for both teams.

NOTE

If an error is found, refer to NNWS Operator Procedures 3.4 and 3.5 for Shutdown and Restart, respectively

6. Review all raw data displayed for transmission errors such as unusual characters.

7. Continually monitor overall system operation. If an error is detected, refer to Table 3-10 for appropriate recovery procedures.

3.4 SHUT DOWN

SHUTDOWN

The NNWS Shutdown procedure is divided into two parts: NORMAL SHUTDOWN and ABNORMAL SHUTDOWN. Part 1, NORMAL SHUTDOWN, is used for normal session termination initiated by the Umpire Operator during a game interrupt. Part 2, ABNORMAL SHUTDOWN, is used when the simulation has been halted due to a system or user error. Each part contains the information required to terminate the session, preserve the files and, if desired, ready the system for Restart.

PART 1
NORMAL SHUTDOWN

NOTE

This Umpire-initiated procedure is to be used for normal termination during a game interrupt with no game Restart desired

1. Terminate simulation model from Umpire's Alphanumeric Terminal as follows:

   A. Enter 21

   B. Verify the following display has occurred:

      HAS THE MODEL ALREADY HALTED? (T or F)

   C. Enter F

   D. Verify the following displays have occurred:

      NNWS ordering game HALT FOR UMPIRE
      TSO:***NAVAL NUCLEAR WARFARE SIMULATION ENDED****

      IS RESTART DESIRED? (T or F)

   E. Enter F

   F. At Operator Terminal, verify a sequence of task termination messages are printed.

   G. At Umpire's Alphaumeric Terminal, verify the following display has occurred:

      SHUTTING DOWN INTER-PROCESSOR COMMUNICATIONS

   H. If necessary, enter C1000000
      LOGOFF
      CTRL Z

NOTE

If session is to be resumed at some future time the checkpoint files should be preserved. Do not perform Step 2 if game history files are to be copied to tape

2. If desired, preserve the checkpoint files from Umpire's Alphanumeric Terminal as follows:

   A. Enter GAMESAVE

   B. Verify the following displays have occurred:

      F4A.OP65.CHKBACK.B1mmddhh
      F4A.OP65.CHKBACK.B2mmddhh

3. If desired, copy current game history to tape from Umpire's Alphanumeric Terminal as follows:

NOTES

1. Current game history should be copied to tape at end of each day's play and before a new scenario or game is started.

2. APL NNWS Programming Personnel must be contacted to submit tapes and passwords forms and to set agreed identifying character prior to executing the GAMEBACK command.

3. The GAMEBACK command automatically executes the GAMESAVE command.

4. Steps B through I may be performed as time and conditions permit.

   A. Enter GAMEBACK (Character ID)

   B. Enter OUT OP65BKT PR(A)

   C. Enter E A O D

   D. Enter VERIFY

   E. Enter F /CODE /

   F. Verify a code of 0000 is displayed.

   G. Enter F

   H. Verify a code of 0000 is displayed.

   I. Repeat Steps G and H two additional times.

J. Enter END NOS

K. Verify READY is displayed.

NOTE

If Steps F and H could not be verified, contact APL NNWS Programming Personnel prior to starting a new session

4. Terminate TSO session from Umpire's Alphanumeric Terminal as follows:

A. Enter LOGOFF

B. Verify statistical information concerning the session is displayed.

5. Terminate Minicomputer NNWS Tasks from Umpire's Alphanumeric Terminal as follows:

A. Depress and hold CTRL key.

B. Depress Z key.

C. Simultaneously release CTRL and Z keys.

NOTE

NNWS file maintenance should be performed daily. Maintenance should be performed only if game play is to be suspended for a minimum of 20 minutes

6. If desired, perform NNWS file maintenance from Operator Terminal as follows:

A. Enter @FILEPURG

7. Shutdown Minicomputer as follows:

A. At Operator Terminal, enter RUN [1,54] SHUTUP

B. Verify the following printout occurs:

ENTER MINUTES TO WAIT BEFORE SHUTDOWN

C. Enter 0

D. Verify the following printout occurs:

***DM1: -DISMOUNT COMPLETE

E. At Minicomputer Front Panel, verify RUN indicator is OUT.

F. At Disk Drive Front Panel, depress RUN/STOP switch.

NOTE

Wait 30-60 seconds before proceeding to Step G

G. Verify RUN/STOP indicator is lit YELLOW.

8. If desired, secure power to system as follows:

A. At Minicomputer Front Panel, rotate Power knob to DC OFF.

B. At Operator Terminal, place Power (Rocker) switch to OFF.

C. At left rear of all three Alphanumeric Terminals, place Power switch DOWN.

D. At Printer/Plotter Orange Panel, depress Power (topmost) switch.

E. At right rear of all three Graphic Scopes, place Power switch UP.

F. At RED Station Power Distribution Panel, place circuit breakers 1, 3, 4, 5, 6, 7, 8, 10, 12, 14 and 16 to OFF.

PART 2
ABNORMAL SHUTDOWN

NOTES

1. An Abnormal Shutdown is any simulation model termination that is not initiated by the Umpire.

2. If TSO:***NAVAL NUCLEAR WARFARE SIMULATION ENDED*** display did not occur, proceed to Step 4.

1. At Umpire's Alphanumeric Terminal, verify the following display has occurred:

   TSO***NAVAL NUCLEAR WARFARE SIMULATION ENDED***

NOTE

Abnormal Shutdown occurs during transmission of orders, receipt of reports, a game interrupt or between game interrupts

2. Determine when Abnormal Shutdown occurred as follows:

   A. If last message received on Umpire's Alphanumeric Terminal was ORDERS TRANSMITTED, perform the following:

      (1) At Operator Terminal, enter PIP DM1:UMPRPT.DAT/LI

      (2) At Operator Terminal, observe time of creation printout. Compare time of creation printout with last ORDRS SENT printout. If time of creation was prior to the ORDRS SENT time, shutdown occurred between interrupts. If time of creation was after ORDRS SENT time, shutdown occurred during receipt of reports.

   B. If last message received on Umpire's Alphanumeric Terminal was REPORTS RECEIVED, perform the following:

      (1) Determine if RED and BLUE Operators have transmitted orders.

      (2) If both Operators have entered 20 on their respective Alphanumeric Terminals, shutdown occurred during transmission of orders. If either Operator has not entered 20, shutdown occurred during the game interrupt.

3. Terminate NNWS Executive from Umpire's Alphanumeric Terminal as follows:

   A. Enter 21

B. Verify the following display has occurred:

HAS THE MODEL ALREADY HALTED? (T or F)

C. Enter T

D. Verify the following display has occurred:

IS RESTART DESIRED? (T or F)

NOTE

Cause of Abnormal Shutdown as determined by Step 2 dictates whether to perform Step E, F or G

E. If shutdown occurred during game interrupt perform the following:

(1) Enter T

(2) Observe simulation restart.

F. If shutdown occurred between game interrupts, refer to NNWS Operator Procedure 3.5 Part 2.

G. If shutdown occurred during transmission of orders or receipt of reports, perform the following:

(1) Enter F

(2) Enter OUT OP65 PR(A)

(3) Enter E A O D

(4) Enter VERIFY

(5) Enter B

(6) Observe display.

(7) Enter UP until name of terminating routine is displayed.

(8) Enter END

(9) If routine name is NPUT or NGET, depress and hold CTRL key. Depress Z key and release both (Refer to NNWS Operator Procedure 3.5 Part 2).

(10) For any other routine name, enter LOGOFF and notify APL NNWS Programming Personnel.

4. Terminate NNWS Executive from Umpire's Alphanumeric Terminal as follows:

   A. Enter 21

   B. Verify the following display has occurred:

      HAS THE MODEL ALREADY HALTED? (T or F)

   C. Enter T

   D. Verify the following display has occurred:

      IS RESTART DESIRED? (T or F)

   E. Enter F

   F. Depress and hold CTRL key.

   G. Depress Z key.

   H. Simultaneously release CTRL and Z keys.

   I. If Restart is desired, refer to NNWS Operator Procedure 3.5 Part 2.

3.5 RESTART

RESTART

The NNWS Restart procedure is divided into three parts: STANDARD RESTART, NON-STANDARD RESTART, and REPLICATION RESTART. Part 1, STANDARD RESTART, is used to restart when the session was terminated by either Umpire action or equipment malfunction during a game interrupt. Standard Restart initiates the session at the game time corresponding to the last game interrupt of the previous session.

Part 2, NON-STANDARD RESTART, is used to restart the game following an Abnormal Shutdown during receipt of reports, transmission of orders, between game interrupts, or due to TSO session termination.

Part 3, REPLICATION RESTART, is used to replay a game from a particular initial state. This enables Players to vary their responses to identical situations. It can also be used to perform Monte Carlo Analysis by playing multiple replications with same responses but different random number streams.

PART 1
STANDARD RESTART

1. Verify NNWS Power Turn-On has been completed in accordance with NNWS Operator Procedure 3.1.

NOTE

If no equipment shutdown has occurred since last session, perform Step 2 and omit Step 3. If equipment shutdown has occurred since last session, omit Step 2 and proceed to Step 3

2. At Operator Terminal, enter RUN NNWS

3. Load NNWS Application Software from Operator Terminal as follows:

   A. Enter @NNWS

   B. After approximately 10 minutes, verify the following printout has occurred:

      > @ <EOF>

   C. Verify all lines have leading > character.

   D. Retain printout as a system configuration log.

4. Initiate Umpire's Alphanumeric Terminal from Operator Terminal as follows:

   A. Verify the following printout has occurred:

      IS THE GAME UMPIRE TERMINAL (TT2:) AVAILABLE? (T or F)

   B. Enter T

5. Initiate communications with Host Computer from Umpire's Alphanumeric Terminal as follows:

   A. Verify the following display has occurred.

      IS NNWS TO COMMUNICATE INTER-PROCESSOR? (T or F)

   B. Enter T

C. Verify the following display has occurred:

```
enter LOGON USERID/PASSWORD SIZE (   )
EXEC model, answer queries, then depress CTRL Z
```

D. Enter LOGON OP65 SIZE(4096)

E. Verify prompt display for account number and password.

NOTE

If prompt does not occur, repeat Step D

F. Enter account number and password.

G. Verify the following display has occurred:

```
OP65 logon in progress at (Time) on (Date)
Availability: Mon-Fri--8:30 a.m. to midnight, Sat.--8:30 a.m.
to 4:30 p.m.
USERPROC CMDPROC
FREE FILE (SYSUDUMP)
READY
```

NOTE

If READY display does not occur, repeat Step F.

6. Initiate NNWS Application on Host Computer from Umpire's Alphanumeric Terminal as follows:

NOTES

1. Refer to Table 3-1 for explanation and listing of operand list.

2. Do not use MODE or G2W parameters.

3. If GAMEBACK command was successfully executed during termination of previous session, use DISP parameter with value of OLD.

A. Enter NNWS [operand list].

B. Verify a single line of four values separated by commas is displayed.

EXAMPLE: S, A, OND, LANT

C. Observe prompt for password.

D. Enter password.

NOTE

CNTRL Z entry (Steps F and G) must be made within 5 seconds after CNTRL Z prompt.

E. Repeat Steps C and D for each additional prompt until the following prompt occurs:

ENTER CNTRL Z NOW

F. Depress and hold CTRL key.

G. Depress Z key.

H. Simultaneously release CTRL and Z keys.

I. Verify the following display has occurred:

ENTER MAP PROJECTION FILE NAME - up to 9 chars.

J. Enter Map Projection file

NOTE

Continually monitor Umpire's Alphanumeric Terminal for unsolicited system messages from the Host Computer. All such messages will be preceded by the character "TSO:". If a message is displayed, notify the Umpire and APL NNWS Programming Personnel and refer to NNWS Operator Procedure 3.3 Part 3.

7. Initiate the RED and BLUE Alphanumeric Terminals from Umpire's Alphanumeric Terminal as follows:

A. Verify the following display has occurred:

Are the RED and BLUE TEAMS available? (T or F)

B. Enter T

8. Restart game play as follows:

A. At Umpire's Alphanumeric Terminal, verify 21 function menu is displayed.

B. At RED and BLUE Alphanumeric Terminals, verify Alpha Menu is displayed.

C. At RED and BLUE Graphic Scopes, verify initial situation map is displayed.

D. At Umpire's Alphanumeric Terminal, enter 20.

E. At Operator Terminal, verify the following printout has occurred:

ORDRS SENT @ (Time)

NOTE

The first set of reports received during this session will be identical to the last set of reports received during the previous session. If players have previously reviewed these reports and do not wish to create orders, the game may be advanced to the next interrupt by entering 20 on the Umpire's Alphanumeric Terminal.

PART 2
NON-STANDARD RESTART

NOTE

Non-Standard Restart is dependent upon when the prior session was terminated. Refer to the applicable case as determined in NNWS Operator Procedure 3.4 Part 2.

Case 1. SHUTDOWN OCCURRED DURING TRANSMISSION OF ORDERS

1. Verify appropriate shutdown steps were completed in accordance with NNWS Operator Procedure 3.4 Part 2.

NOTE

Players should forego receipt of reports at first game interrupt of the Non-Standard Restart. Umpire will ensure that all orders created during last game interrupt of prior session will be re-transmitted. When all orders are ready for transmission, Umpire operator transmits orders by entering 20 on the Umpire's Alphanumeric Terminal. Game play is to be resumed on second game interrupt.

2. Conduct Standard Restart in accordance with NNWS Operator Procedure 3.5 Part 1.

3. Verify Umpire's Alphanumeric Terminal displays NEW REPORTS RECEIVED.

4. Direct RED and BLUE Teams to forego receipt of reports.

5. Determine version number, size, and time of creation of the latest orders file from the Operator Terminal as follows:

NOTE

If BLUE team did not enter orders, proceed to Step E.

A. Enter PIP BLUORD.DAT/LI

B. Observe version and size printout

EXAMPLE: BLUORD.DAT;26 (Version) 0 (Size) 9-DEC-80 13:57

NOTE

If size is other than 0, proceed to Step E.

C. Enter PIP BLUORD.DAT;26/DE

D. Repeat Steps A, B and, if necessary, C.

E. If RED team did not enter orders, proceed to Step J.

F. Enter PIP REDORD.DAT/LI

G. Observe version and size printout

EXAMPLE: REDORD.DAT;26 0 9-DEC-80 13:57

NOTE

If size is other than 0, proceed to Step J.

H. Enter PIP REDORD.DAT;26/DE

I. Repeat Steps F, G and, if necessary, H.

J. At Umpire's Alphanumeric Terminal, enter 20

NOTE

Game play is resumed at next game interrupt.

Case 2. SHUTDOWN OCCURRED DURING GAME INTERRUPT

1. Refer to NNWS Operator Procedure 3.4 Part 2.

Case 3. SHUTDOWN OCCURRED BETWEEN INTERRUPTS

1. Request APL NNWS Programming Personnel to determine cause of abnormal shutdown and appropriate game interrupt time for restart.

2. Re-establish communications with Host Computer from Umpire's Alphanumeric Terminal as follows:

A. Verify the following display has occurred:

IS NNWS TO COMMUNICATE INTER-PROCESSOR? (T or F)

B. Enter T

C. Verify the following display has occurred:

enter LOGON USERID/PASSWORD SIZE ( )
EXEC model, answer queries, then depress CNTL Z

D. Enter LOGON OP65 SIZE(4096)

E. Verify prompt for account number and password is displayed.

NOTE

If prompt does not occur, repeat Step D.

F. Enter account number and password.

G. Verify the following display has occurred:

OP65 logon in progress at (Time) on (Date)
Availability: Mon-Fri--8:30 a.m. to midnight, Sat-8:30 a.m. to 4:30 p.m.
USERPROC CMDPROC
FREE FILE(SYSUDUMP)
READY

NOTE

If READY display does not occur repeat Step F

3. If required, perform checkpoint file maintenance from Umpire's Alphanumeric Terminal as follows:

A. Enter GETIME CHKPT1

B. Verify game time display occurs.

EXAMPLE: DAY 21 HOUR 13 MIN 36

C. Enter GETIME CHKPT 2

D. Verify game time display occurs.

E. Compare both displays to determine which CHKPT file contains the proper game state.

F. Enter E CHKEY 0 D

G. Enter V

H. Enter DO

I. Verify display of CHKPT1 or CHKPT2 has occurred.

NOTE

Perform Steps J and K only if CHKPT number displayed in Step I does not correspond to proper CHKPT file. If CHKPT2 was displayed in Step I, reverse numbers entered in Step J

J. Enter C /1/2

K. Verify display of CHKPT2 or CHKPT1 has occurred.

L. Enter SAVE

M. Enter END

4. Re-initiate NNWS Application on Host Computer from Umpire's Alphanumeric Terminal as follows:

NOTES

1. Refer to Table 3-1 for explanation and listing of operand list.

2. Do not use MODE or G2W parameters.

A. Enter NNWS [operand list].

B. Verify a single line of four values separated by commas is displayed.

EXAMPLE: S, A, OND, LANT

C. Observe prompt for password.

D. Enter password.

NOTE

CNTRL Z entry (Steps F and G) must be made within 5 seconds after CNTRL Z prompt

E. Repeat Steps C and D for each additional prompt until the following prompt occurs:

ENTER CNTRL Z NOW

F. Depress and hold CTRL key.

G. Depress Z key.

H. Simultaneously release CTRL and Z keys.

I. Verify the following display has occurred:

ENTER MAP PROJECTION FILE NAME - up to 9 chars.

J. Enter Map Projection file.

5. If required, re-initiate RED and BLUE Alphanumeric Terminals from Umpire's Alphanumeric Terminal as follows:

A. Verify the following display has occurred:

Are the RED and BLUE TEAMS available? (T or F)

B. Enter T

6. Restart game play as follows:

A. At Umpire's Alphanumeric Terminal, verify 21 function menu is displayed.

B. At RED and BLUE Alphanumeric Terminals, verify Alpha Menu is displayed.

C. At RED and BLUE Graphic Scopes, verify situation map is displayed.

D. At Umpire's Alphanumeric Terminal, enter 20.

E. At Operator Terminal, verify the following printout has occurred:

ORDRS SENT @ (Tj--`

)TE

Players should forego receipt of reports at first game interrupt of the Non-Standard Restart. Umpire will ensure that all orders created during the last game interrupt of prior session will be re-transmitted. When all orders are ready for transmission, Umpire Operator transmits orders by entering 20 on the Umpire's Alphanumeric Terminal. Game play is to be resumed on second game interrupt.

7. Verify Umpire's Alphanumeric Terminal displays NEW REPORTS RECEIVED.

8. Direct RED and BLUE Teams to forego receipt of reports.

9. Determine version, number, size and time of creation of the latest orders file from the Operator Terminal as follows:

NOTE

If BLUE Team did not enter orders, proceed to Step E.

A. Enter PIP BLUORD.DAT/LI

B. Observe version and size printout.

EXAMPLE: BLUORD.DAT;26 (version) 0 (size) 9-DEC-80 13:57

NOTE

If size is other than 0, proceed to Step E.

C. Enter PIP BLUORD.DAT;26/DE

D. Repeat Steps A, B and, if necessary, C.

E. If RED Team did not enter orders, proceed to Step J.

F. Enter PIP REDORD.DAT/LI

G. Observe version and size printout.

EXAMPLE: REDORD.DAT;26 0 9-DEC-80 13:57

NOTE

If size is other than 0, proceed to Step J.

H. Enter PIP REDORD.DAT;26/DE

I. Repeat Steps F, G and, if necessary, H.

J. At Umpire's Alphanumeric Terminal, enter 20.

NOTE

Game play is resumed at next game interrupt.

Case 4. SHUTDOWN OCCURRED DURING RECEIPT OF REPORTS

1. Verify appropriate Shutdown steps were completed in accordance with NNWS Operator Procedure 3.4 Part 2.

2. Request APL NNWS Programming Personnel to determine cause of shutdown and appropriate game interrupt time for restart.

3. If required, perform checkpoint file maintenance from Umpire's Alphanumeric Terminal as follows:

   A. Enter GETIME CHKPT1

   B. Verify game time display occurs.

      EXAMPLE: DAY 21 HOUR 13 MIN 26

   C. Enter GETIME CHKPT2

   D. Verify game time display occurs.

   E. Compare both displays to determine which CHKPT file contains the proper game state.

   F. Enter E CHKEY O D

   G. Enter V

   H. Enter DO

   I. Verify display of CHKPT1 or CHKPT2 has occurred.

      NOTE

      Perform Steps J and K only if CHKPT number displayed in Step I does not correspond to proper CHKPT file. If CHKPT2 was displayed in Step I, reverse numbers entered in Step J.

   J. Enter C /1/2

   K. Verify display of CHKPT2 or CHKPT1.

   L. Enter SAVE

   M. Enter END

4. Re-initiate NNWS Application on Host Computer from Umpire's Alphanumeric Terminal as follows:

NOTES

1. Refer to Table 3-1 for explanation and listing of operand list.

2. Do not use MODE or G2W parameters.

A. Enter NNWS [operand list].

B. Verify a single line of four values separated by commas is displayed.

EXAMPLE: S, A, OND, LANT

C. Observe prompt for password.

D. Enter password.

NOTE

CNTRL Z entry (Steps F and G) must be made within 5 seconds after CNTRL Z prompt

E. Repeat Steps C and D for each additional prompt until the following prompt occurs:

ENTER CNTRL Z NOW

F. Depress and hold CTRL key.

G. Depress Z key.

H. Simultaneously release CTRL and Z keys.

I. Verify the following display has occurred:

ENTER MAP PROJECTION FILE NAME - up to 9 chars.

J. Enter Map Projection file.

5. If required, re-initiate RED and BLUE Alphanumeric Terminals from Umpire's Alphanumeric Terminal as follows:

A. Verify the following display has occurred:

Are the RED and BLUE TEAMS available? (T or F)

B. Enter T

6. Restart game play as follows:

   A. At Umpire's Alphanumeric Terminal, verify 21 function menu is displayed.

   B. At RED and BLUE Alphanumeric Terminals, verify Alpha Menu is displayed.

   C. At RED and BLUE Graphic Scopes, verify situation map is displayed.

   D. At Umpire's Alphanumeric Terminal, enter 20

   E. At Operator Terminal, verify the following printout has occurred:

      ORDRS SENT @ (Time)

Case 5. TSO SESSION ON HOST COMPUTER SHUTDOWN and REPLICATION RESTART

NOTES

1. Omit Step 1 if procedure is used for Replication Restart

2. Verify restart procedure with APL NNWS Programming Personnel. Restart with improper procedure could result in loss of history file data.

1. Verify appropriate shutdown steps were completed in accordance with NNWS Operator Procedure 3.4 Part 2.

2. At Operator Terminal, enter RUN NNWS

3. Re-initiate Umpire's Alphanumeric Terminal from Operator Terminal as follows:

   A. Verify the following printout has occurred:

      IS THE GAME UMPIRE TERMINAL (TT2:) AVAILABLE? (T or F)

   B. Enter T

4. Re-initiate communications with Host Computer from Umpire's Alphanumeric Terminal as follows:

   A. Verify the following display has occurred:

      IS NNWS TO COMMUNICATE INTER-PROCESSOR? (T or F)

B. Enter T

C. Verify the following display has occurred:

```
enter LOGON USERID/PASSWORD SIZE (   )
EXEC model, answer queries, then depress CTRL Z
```

D. Enter LOGON OP65 SIZE(4096)

E. Verify prompt display for account number and password.

F. Enter account number and password.

G. Verify the following display has occurred:

```
OP65 logon in progress at (Time) on (Date)
Availability: Mon-Fri--8:30 a.m. to midnight, Sat--8:30 a.m. to 4:30 p.m.
USERPROC CMDPROC
FREE FILE(SYSUDUMP)
READY
```

NOTE

If READY display does not occur, repeat step F

5. If required, perform History File maintenance from Umpire's Alphanumeric Terminal as follows:

NOTES

1. If checkpoint files have to be restored, APL NNWS Programming Personnel should be contacted to determine the proper date-time group.

2. APL NNWS Programming Personnel must be contacted to submit tapes and password forms and to set agreed identifying character prior to executing the GAMEBACK command.

3. Steps C through J may be performed as time and conditions permit.

A. If required, enter RESTORE mmddhh

B. Enter GAMEBACK (character ID)

C. Enter OUT OP65BKT PR(A)

D. Enter E A O D

E. Enter VERIFY

F. Enter F /CODE/

G. Verify a code of 0000 is displayed.

H. Enter F

I. Verify a code of 0000 is displayed.

J. Repeat Steps H and I two additional times.

K. Enter END NOS

L. Verify READY is displayed.

NOTE

If Steps G and I cannot be verified, contact APL NNWS Programming Personnel prior to starting a new session

6. *If required perform checkpoint file maintenance from* Umpire's Alphanumeric Terminal as follows:

A. Enter GETIME CHKPT1

B. Verify game time display occurs.

EXAMPLE: DAY 21 HOUR 13 MIN 26

C. Enter GETIME CHKPT2

D. Verify game time display occurs.

E. Compare both displays to determine which CHKPT contains the proper game state.

F. Enter E CHKEY 0 D

G. Enter V

H. Enter DO

I. Verify display of CHKPT1 or CHKPT2 has occurred.

NOTE

Perform Steps J and K only if CHKPT number displayed in Step I does not correspond to proper CHKPT file. If CHKPT2 was displayed in Step I, reverse numbers entered by Step J.

J. Enter C /1/2

K. Verify display of CHKPT2 or CHKPT1.

L. Enter SAVE

M. Enter END

7. Re-initiate NNWS Applications on Host Computer from Umpire's Alphanumeric Terminal as follows:

NOTES

1. Refer to Table 3-1 for explanation and listing of operand list.

2. Do not use MODE parameter.

3. Use DISP parameter with value of OLD.

4. G2W parameter may be used only when running replications.

A. Enter NNWS [operand list].

B. Verify a single line of four values, separated by commas, is displayed.

EXAMPLE: S, A, OND, LANT

C. Observe prompt for password.

D. Enter password.

NOTE

CNTRL Z entry (Steps F and G) must be made within 5 seconds after CNTRL Z prompt.

E. Repeat Steps C and D for each prompt until the following prompt occurs:

ENTER CNTRL Z NOW

F. Depress and hold CTRL key.

G. Depress Z key.

H. Simultaneously, release CTRL and Z keys.

I. Verify the following display has occurred:

ENTER MAP PROJECTION FILE NAME - up to 9 chars.

J. Enter Map Projection file.

8. Re-initiate the RED and BLUE Alphanumeric Terminals from Umpire's Alphanumeric Terminal as follows:

A. Verify the following display has occurred:

Are the RED and BLUE TEAMS available? (T or F)

B. Enter T

9. Restart game play as follows:

A. At Umpire's Alphanumeric Terminal, verify 21 function menu is displayed.

B. At RED and BLUE Alphanumeric Terminals, verify Alpha Menu is displayed.

C. At RED and BLUE Graphic Scopes, verify situation map is displayed.

D. At Umpire's Alphanumeric Terminal, enter 20

E. At Operator Terminal, verify the following printout has occurred:

ORDRS SENT @ (Time)

PART 3
REPLICATION RESTART

1. At the desired game interrupt, shutdown game from Umpire's Alphanumeric Terminal as follows:

   A. Enter 21

   B. Verify the following display has occurred:

      HAS THE MODEL ALREADY HALTED? (T or F)

   C. Enter F

   D. Verify the following displays have occurred:

      NNWS ordering game HALT for UMPIRE
      TSO:***NAVAL NUCLEAR WARFARE SIMULATION ENDED***
      IS RESTART DESIRED? (T or F)

   E. Enter F

   F. At Operator Terminal, verify a sequence of task termination messages is printed.

2. Preserve the checkpoint and history files from Umpire's Alphanumeric Terminal as follows:

   NOTES

   1. Record checkpoint file date-time group for future reference.

   2. APL NNWS Programming Personnel must be contacted to submit tapes and password forms and to set agreed identifying character prior to executing this command.

   3. Steps B through I may be performed as time and conditions permit.

   A. Enter GAMEBACK (character ID).

   B. Enter OUT OP65BKT PR(A)

   C. Enter E A O D

   D. Enter VERIFY

E. Enter F /CODE/

F. Verify a code of 0000 is displayed.

G. Enter F

H. Verify a code of 0000 is displayed.

I. Repeat Steps G and H two additional times.

J. Enter END NOS

K. Verify READY is displayed.

NOTE

If Steps F and H cannot be verified, contact APL NNWS Programming Personnel prior to starting a new session

3. Terminate TSO session from Umpire's Alphanumeric Terminal as follows:

A. Enter LOGOFF

B. Verify statistical information concerning the session is displayed.

4. Terminate Minicomputer NNWS Tasks from Umpire's Alphanumeric Terminal as follows:

A. Depress and hold CTRL key.

B. Depress Z key.

C. Simultaneously release CTRL and Z keys.

NOTE

Perform Step 5 and omit Step 6 for initial running of replication. Perform Step 6 and omit Step 5 for subsequent replications.

5. Copy Data Base Disk to Scratch Disk as follows:

A. At Operator Terminal, enter BOO [1,54]DSCSYS

B. At Operator Terminal, verify the following printout occurred:

DSC>

C. At Disk Drive Front Panel, depress RUN/STOP switch.

D. Dismount "NNWS SYSTEM" cartridge from Disk Drive 0.

E. Obtain and load Scratch cartridge in Disk Drive 0.

F. At Disk Drive Front Panel, depress RUN/STOP switch.

NOTE

Wait 15 to 30 seconds for Disk Drive spin-up prior to performing Step G

G. At Operator Terminal, enter DM0: /VE=DM1:

NOTE

Wait approximately 30 minutes prior to performing Step H

H. At Operator Terminal, verify > prompt is printed.

I. At Disk Drive Front Panel, depress RUN/STOP switch.

J. Dismount scratch cartridge from Disk Drive 0 and re-load NNWS SYSTEM cartridge.

NOTE

Label scratch cartridge DATABASE COPY and retain cartridge for subsequent replications

6. Copy DATABASE COPY to DATABASE cartridge as follows:

A. At Operator Terminal, enter BOO [1,54]DSCSYS

B. At Operator Terminal, verify the following printout occurred:

DSC>

C. At Disk Drive Front Panel, depress RUN/STOP switch.

D. Dismount NNWS SYSTEM cartridge from Disk Drive 0.

E. Load DATABASE COPY cartridge in Disk Drive 0.

F. At Disk Drive Front Panel, depress RUN/STOP switch.

NOTE

Wait 15 to 30 seconds for Disk Drive spin-up prior to performing Step G

G. At Operator Terminal, enter DM1: /VE= DM0:

NOTE

Wait approximately 30 minutes prior to performing Step H

H. At Operator Terminal, verify > prompt is printed.

I. At Disk Drive Front Panel, depress RUN/STOP switch.

J. Dismount DATABASE COPY cartridge and re-load NNWS SYSTEM cartridge in Disk Drive 0.

K. At Disk Drive Front Panel, depress RUN/STOP switch.

NOTE

Wait 15 to 30 seconds for Disk Drive spin-up prior to performing Step 7.

7. Load operating system software as follows:

A. At Minicomputer Front Panel, depress and hold CNTRL pushbutton.

B. Depress BOOT pushbutton.

C. Simultaneously release CNTRL and BOOT pushbuttons.

D. At Operator Terminal, verify one line of four six-digit numbers and a $ sign on the second line is printed.

```
EXAMPLE:  070730   000024   000716   003632
          $
```

E. At Operator Terminal, enter DM

F. At Operator Terminal, verify the following printout occurs:

```
 RSX-11M  V3.1  BL22  124K  MAPPED
>RED DM0:=SY0:
>RED DM0:=LB0:
>MOU DM0:=RSX11MBL22
>@ [1,2] STARTUP
>; RSX11M VERSION 3.1 autopatched 19-april-79 by DEC
>; +512. byte DRVPAR, +1024. byte POOL space, by NKB
>; 4096, byte MEGCOM partit. add. 27-may-1979 by NKB
>; post-boot load of GX: & GP: 21-JUN-1979 by NKB
>* MUST ENTER TIME,  DATE (HR:MN  DD-MMM-YY) [S]:
```

G. At Operator Terminal, enter time and date in the following order: HR:MN DD-MMM-YY

EXAMPLE: 13:15 09-DEC-80

H. At Operator Terminal, verify the following printout occurs:

```
> TIM HR:MN  DD-MMM-YY
> ACS DMO:/BLKS=500.
> MOU DM1:/OVR
> ACS DM1:/BLKS=1000.
> SET  /MAXEXT=16.K
> INS [1,54] SFT/TASK=... SFT
  ERL ERROR LOG INITIALIZED
> LOA GX:/PAR=DRVPAR
> LOA GP:/PAR=DRVPAR
> SET  /UIC=  [7,42]  !  SET UP FOR NNWS GAME EXECUTION
> @ <EOF>
>
```

I. Verify TIM (top) line contains correct time and date.

NOTE

If TIM (top) line is inaccurate, re-enter correct time and date per Steps J, K, and L

J. Enter TIM (HR:MN DD-MMM-YY)

EXAMPLE: TIM 13:15 09-DEC-80

K. Enter TIM

L. Verify correct time and date is printed

M. Perform restart in accordance with NNWS OPERATOR PROCEDURE 3.5 Part 2 Case 5.

NOTES

1. The checkpoint files must be restored and the CHKEY must be set to the desired interrupt time for each replication.

2. Random variation of replications may be obtained by changing the G2W operand parameter.

3. A replication's interrupt cycle may be altered by changing the IC operand parameter.

3.6 PAPER LOAD

DECWRITER II PAPER LOAD

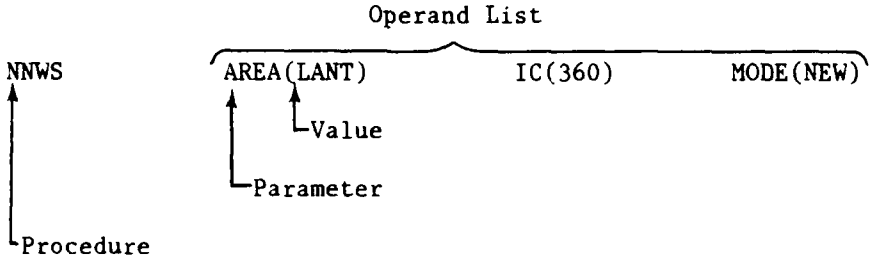
1. Grasp sides of Platen Cover and raise.
2. Flip left and right Paper Bailers outward.
3. Position Paper Supply stack between DECWRITER's Front Legs.
4. Feed top Paper Supply sheet upward through rectangular slot beneath Keyboard until second sheet emerges.
5. Engage first four holes of second sheet into corresponding Traction Nubs.
6. Snap Paper Bailers flat against Traction Belt to secure second sheet.
7. Feed first sheet through slot located beneath Hinged Cover until sheet emerges from rear of clear plastic window.
8. Lower Platen Cover until it snaps into detents.
9. Place DECWRITER II Power Switch to OFF and then to ON to reset electronics.

TABLES

Table 3-1. OPERAND LIST

PARAMETER	ALLOWABLE VALUE	DESCRIPTION
DATA	NNWS. data set name	Name of scenario or data set
AREA	LANT, PAC, MED	Geographical theater area (preset value = Pacific)
SEASON	JFM, AMJ, JAS, OND	Calendar months (preset value = OND)
S	S, W	Season (summer or winter) for SOSUS performance data (preset value = summer)
CIC	Integer > 0	Critical interrupt cycle time in minutes (preset value = 6 minutes)
IC	Integer > 0	Interrupt cycle time in minutes, value must be a multiple of CIC (preset value = 720 minutes)
G2W	$0 \leq$ Integer $< 2^{15}-1$	Random number generator initialization (preset value = 0)
MODE	NEW, RES	Operating mode (new or restart) (preset value of restart)
DISP	MOD, OLD	History file disposition (preset value = modified)

Sample entry:



Description:

The operand list specifies the parameters to be overridden and the values to be assigned to them. Parameters not overridden will default to preset values.

Table 3-2. ALPHA MENU

01	EVENT REPORT SUMMARY
02	HOSTILE SUB CONTACT SUMMARY
03	SURF/SUB EMPLOYMENT SUMMARY
04	AIRCRAFT EMPLOYMENT SUMMARY
05	AIRFIELD STATUS
06	SUBMARINE ASSIGNMENT
07	SUB DIRECTED ASSIGNMENT
08	SUB ATTACK ORDER
09	DELAYED ATTACK/STRIKE ORDER
10	NUCLEAR WEAPON RELEASE AUTHORITY
11	DEFENSE CONDITION ORDER
12	SURTASS UNIT ASSIGNMENT
13	AIRCRAFT ASSIGNMENT
14	AIRCRAFT DIRECTED ASSIGNMENT
15	AIRCRAFT ATTACK ORDER
16	REQUEST AIRCRAFT TRANSFER
17	VP BREAK STREAM ORDER
18	SUB REPAIR/RELOAD ORDER
19	SUB/AIRCRAFT COORDINATION
20	XMIT ORDERS/RESUME GAME
21	request GAME TERMINATION (available on Umpires Alphanumeric Terminal only)

Table 3-3. EVENT REPORTS SUMMARY

REPORT TYPE	REPORT COMMENT	REPORTING UNIT TYPE	TACTICAL SITUATION
ASW SURVEILLANCE	"SPA RADIUS= "	SOSUS	SOSUS reported estimated target information on contact with a probablil-ity area radius as noted.
ATTACKED BY SUB	Prior state of submarine (Note 1)	Submarine	Submarine was attacked by a hostile submarine.
ATTACKED BY VP	Prior state of submarine (Note 1)	Submarine	Submarine was attacked by a hostile VP stream.
BEGIN ATTACK	None	Submarine or VP stream	Unit began attack on target as ordered by player or TARs.
BEGIN ATTACK APPROACH	None	Submarine or VP stream	Unit began approach to attack.
BEGIN ENROUTE	None	Submarine, VP stream or SURTASS unit	Unit began enroute to assigned station or point where it is to perform mission.
BEGIN EVADE	Prior state of submarine (Note 1)	Submarine	Submarine began evade.
BEGIN ON STATION	None	Submarine, VP stream or SURTASS unit	Unit has arrived at assigned station and has begun to perform mission.
BEGIN RELOAD	None	Submarine	Submarine has arrived at assigned point and has commenced reload.
BEGIN REPAIR	None	Submarine	Submarine has arrived at assigned point and has commenced repair/reload.
BEGIN STRIKE	None	Submarine	Submarine has begun to launch strike missiles as ordered.
BEGIN TRAIL	None	Submarine or VP stream	Unit successfully attained trail on target.
BEGIN TRAIL APPROACH	None	Submarine or VP stream	Unit began approach to trail.

Table 3-3. EVENT REPORTS SUMMARY (Continued)

REPORT TYPE	REPORT COMMENT	REPORTING UNIT TYPE	TACTICAL SITUATION
CANNOT ATTACK	"NO AVAIL WEAPONS" or "NOT ENGAGED WITH # "	Submarine or VP stream	Unit cannot attack target because of lack of appropriate weapons or unit was not in contact with target.
CANNOT STRIKE	"NO AVAIL WEAPONS" or "INVALID STATE/ MISSION"	Submarine	Submarine cannot attack because of a lack of appropriate weapons or because it is not in proper state (on station or evading while on station) or mission (strike).
COMPLETE STRIKE	"NRML= " and post-engagement order (Note 2)	Submarine	Submarine successfully completed strike mission, reported the number of reliable missiles launched (NRML), and appealed to the post-strike PEOs.
DETECTION	None	Submarine or VP stream	Unit detected a hostile submarine. Report is generated only if no other report implying the detection (example: BEGIN EVADE) is generated.
DROP ATTACK APPROACH	None	Submarine	Submarine dropped approach to attack in order to prosecute a second, higher priority, contact as determined by TARs.
DROP TRAIL	None	Submarine	Submarine dropped trail to prosecute a second, higher priority, contact as determined by TARs.
DROP TRAIL APPROACH	None	Submarine	Submarine dropped approach to trail to prosecute a second, higher priority, contact as determined by TARs.

Table 3-3. EVENT REPORTS SUMMARY (Continued)

REPORT TYPE	REPORT COMMENT	REPORTING UNIT TYPE	TACTICAL SITUATION
END ATTACK	Whether "TGT LIVED" or "TGT DIED" and post-engagement order (Note 2)	Submarine or VP stream	Unit completed its attack, reported the outcome, and and appealed to the post-attack PEOs.
END EVADE	Post-engagement order (Note 2)	Submarine	Submarine ended evade and appealed to the post-evade PEOs.
END RELOAD	None	Submarine	Submarine completed reload and is available for reassignment.
END REPAIR	None	Submarine	Submarine completed repair/reload and is available for reassignment.
KILLED	None	Submarine	Submarine was killed in engagement with a hostile unit.
LOSE CONTACT	Post-engagement order (Note 2)	Submarine or VP stream	Unit was forced to lose contact either when it began an attack immediately after another unit attacked its contact, clouding the water or when the conditions under which a detection was made would not permit engagement despite assignment of the unit to the contact. Unit appealed to the lost-contact PEOs.
LOSE TRAIL	Post-engagement order (Note 2)	Submarine	Submarine lost contact while in trail on the target and appealed to the lost-contact PEOs.
MISSED ATTACK APPROACH	Post-engagement order (Note 2)	Submarine or VP stream	Unit failed to localize to within the stated criteria and appealed to the lost-contact PEOs.
MISSED TRAIL APPROACH	Post-engagement order (Note 2)	Submarine or VP stream	Unit failed to localize to within the stated criteria and appealed to the lost-contact PEOs.

Table 3-3. EVENT REPORTS SUMMARY (Continued)

REPORT TYPE	REPORT COMMENT	REPORTING UNIT TYPE	TACTICAL SITUATION
MISSED TURNOVER	Prior state of stream (Note 4) and Post-engagement order (Note 2)	VP stream	VP stream lost contact with target during a turnover and appealed to the lost-contact PEOs.
REPORTBACK	Order type (Note 3)	Submarine or VP stream	Unit acknowledged receipt of order indicated.
REQUEST REASSIGNMENT	None	Submarine	Submarine completed or could not continue mission, and requires player assistance for reassignment.
REQUEST RELOAD	None	Submarine	Submarine depleted weapon supply and requires a reload order from player.
REQUEST REPAIR	None	Submarine	Submarine sustained considerable damage and requires a repair order from player.
SITUATION	None	Submarine or VP stream	Unit made its periodic, general status report.
STOP STRIKE	"NRML= "	Submarine	Submarine failed to complete strike action due to interference from a hostile unit and reported the number of reliable missiles launched (NRML).
STREAM TERMINATED	Reason for termination (Note 5)	VP stream	VP stream terminated due to reason stated in comment field.
TARGET ATTACKED FRIENDLY	None	Submarine	Submarine observed target attack a friendly submarine.
TARGET LAUNCHED SLBM	None	Submarine or VP stream	Unit observed target launch of SLBM strike missiles.
VP UNAVAILABLE	None (Note 6)	VP airfield	VP stream terminated due to lack of appropriate type VP at home airfield to support the stream.

Table 3-3. EVENT REPORTS SUMMARY (Continued)

NOTES

1. Prior state of submarine comments:

WAS ENROUTE	WAS IN TRAIL APPR
WAS ON STATION	WAS IN TRAIL
WAS IN EVADE	WAS IN ATTACK APPR
WAS IN ATTACK ACTION	WAS IN STRIKE ACTION

2. Post-engagement order comments:

   If a submarine:

AWAIT ORDERS	CONT RPR MSN (continue repair mission)
RET TO STA (return to station)	CONT RLD MSN (continue reload mission)

   If a VP stream:

   RET TO BASE (return to base)
   RET TO STA (return to station)

3. Order type comments:

UNDIR ASSIGNMENT	COORDINATION ORDER
SLBM STRIKE ASSIGNMENT	ATTACK ORDER
RELOAD ASSIGNMENT	NUC REL AUTH
REPAIR ASSIGNMENT	DEFCON CHARGE
DIR ASSIGNMENT	BREAK VPSTREAM ORDER

4. Prior state of stream comments:

WAS ENR (enroute)	WAS IN A-A (attack approach)
WAS ON STA (on station)	WAS IN TRAIL
WAS IN T-A (trail approach)	WAS IN ATK (attack)

5. Reason for VP stream Termination:

INVALID VP CLASS	TIME ON STA INADEQUATE
VP UNAVAILABLE	TC BREAK STREAM ORDER
INVALID CONTACT #	PEO BREAK STREAM ORDER
FLIGHT DIST TOO GREAT	STRM COUNT EXHAUSTED

6. VP UNAVAILABLE report is not implemented in baseline NNWS.

Table 3-4. ALPHANUMERIC REPORTS

Item 01 EVENT REPORTS SUMMARY

Typical Display:

```
                                                        GAME TIME =  151245
 DAY TIME    UNIT          REPORT      ECN CLS    MISSION      COMMENT
  15  1 0  SOSUS           ASW SURV      1 YD              SPA RADIUS=50
  15  330  FLT1MRNH 574    REPORT BACK             SURVASW UNDIR ASSIGNMENT
                        END OF SUMMARY REPORT
```

Remarks: Redisplays report summary displayed at last game interrupt. Refer to Table 3-3 for explanation of reports.

Item 02 HOSTILE SUB CONTACT SUMMARY

Typical Display:

```
                                                        GAME TIME =  151245
                                REPORTED BY              ASSIGNED TO  ENGAGED BY
CN  CLS    LAT     LONG    SPA     UNIT        DAY HRMN                   UNIT
  1 YD    54 35N  16  12W 120    SOSUS         3  1 0
                                                      SSN  638
                                                                  FLT2MRNH 575
  2 HEN   70 24N  17  53W  10    SSN 637       5  534
                                                      SSN  637
                                                                  SSN  637
```

Remarks: Displays all reported contacts. The RED display differs from the BLUE in that the RED contains no surveillance data and it classifies contacts as nuclear powered (NUC) or diesel powered (DSL) only.

The ASSIGNED TO field will contain a unit designator only if a unit has been assigned to the contact by a Directed Assignment Order (Alpha Menu items 07 and 14).

The ASSIGNED TO field unit designator will be dropped when the unit has been reassigned (Alpha Menu items 06, 07, 17 and 18) or when one of the following reports is received:

REQUEST RELOAD	REQUEST REPAIR
KILLED	REQUEST REASSIGNMENT
	VP STREAM TERMINATED

The ENGAGED BY field will contain a unit designator only if a unit has been linked to the contact by one of the following reports:

BEGIN TRAIL APPROACH	BEGIN ATTACK APPROACH
BEGIN TRAIL	BEGIN ATTACK

Table 3-4. ALPHANUMERIC REPORTS (Continued)

The ENGAGED BY field unit designator will be dropped upon receipt of one of the following reports:

LOST CONTACT	MISSED ATTACK APPROACH
LOST TRAIL	MISSED TRAIL APPROACH
END ATTACK	KILLED
DROP TRAIL	MISSED TURNOVER
DROP TRAIL APPROACH	VP STREAM TERMINATED
DROP ATTACK APPROACH	

Item 03 SURF/SUB EMPLOYMENT SUMMARY

Typical Display:

GAME TIME = 151245

			ASSN		ENGAG		←OATS→					←MISSION AVAIL→						
UNIT	MSN	SRCH	CN	CL	CN	CL	SW	MB	WD	SN	CM	DR	PT	SV	ST	RP	RL	STATUS
SSN 637	P.ASW	AREA	2	YD	2	YD	100	100	100	100	100	1	1	1	1	1	1	TRAIL
SSN 638	D.ASW	BARR	1	YD			100	100	100	100	100	1	1	1	1	1	1	ONSTA

Remarks: Displays status of submarine and surface units.

Item 04 AIRCRAFT EMPLOYMENT SUMMARY

Typical Display:

GAME TIME = 151245

						ASSIGNED		ENGAGED			
TYPE	BASE	FLT NO	MISSION	SEARCH		CN	CLS	CN	CLS	TOS	STATUS
FLT3	KEFK	591 0	PAT ASW	AREA				2	YD	6.8	TRAIL
FLT1	MRNH	574 10	SERV ASW	AREA						8.5	ENROUTE

Remarks: Displays status of aircraft units. Display is enabled for BLUE team only.

Table 3-4. ALPHANUMERIC REPORTS (Continued)

Item 05 AIRFIELD STATUS

GAME TIME = 151245

Typical Display:

AIRFIELD STATUS REPORT

AIRFLD		#VP1	#VP2	#VP3
KEFK	1	10	8	10
ROTA	2	0	10	10
LAJS	3	0	0	0
BERM	4	10	3	0
SGMA	5	10	10	0
JAXE	6	10	10	0
BRWK	7	10	10	0
SUDA	8	10	10	0
ORLS	9	10	10	0
RRDS	10	10	10	0
ESPO	11	10	8	0
BODA	12	10	10	0
ADYA	13	10	10	0
MRNH	14	10	10	8

Remarks: Displays availability of aircraft of each platform class. Platform class (VP1, VP2, VP3) corresponds to the classes defined in the scenario data set. Display is enabled for BLUE t[illegible] only. Airfields are defined in the scenario data set.

Table 3-5. DISPLAY ABBREVIATIONS

A-A	Attack Approach
AIRFLD	Airfield
APPR	Approach
ATK	Attack
AVAIL	Available
CL	Contact classification
CLS	Class
CM	Communications - Operational Attribute
CN	Contact number
CONT RLD MSN	Continue Reload Mission
CONT RPR MSN	Continue Repair Mission
CONV	Conventional Submarine
CSE	Course
CVAP	Composite submarine class - Charlie, Victor, Alpha, Papa
DIR	Direct
DR	Directed ASW Mission
ECN	Contact Number
ENR	Enroute
FLT	VP Stream Flight Number
HEN	Composite submarine class - Hotel, Echo, November
HRMN	Time (Hour/Minutes)
M:A	Mission: Reload/Re-arm
MB	Mobility - Operational Attribute
M:K	Mission: Strike
M:P	Mission: Patrol
M:R	Mission: Repair
M:S	Mission: Surveillance ASW
MSN	Mission
NO	Number of VP in stream
NRML	Number of Reliable Missiles Launched
NUC	Nulcear Powered Submarine
OATS	Operational Attributes
PEO	Post-Engagement Order
PT	Patrol ASW Mission
RET TO BASE	Return to Base
RET TO STA	Return to Station
RL	Reload Mission
RP	Repair Mission
SN	Sensors - Operational Attribute
SRCH	Search
ST	Strike Mission
STAT	Unit State
SURV	Surveillance Mission
SV	Surveillance ASW Mission
SW	Seaworthiness - Operational Attribute
T-A	Trail Approach
TGT	Target
TOS	Time on Station

Table 3-5. DISPLAY ABBREVIATIONS (Continued)

TRL	Trail
UNDIR	Underdirected
Vpstrm	Patrol Aircraft Group
WD	Weapons Delivery - Operation Attribute
XMIT	Transmit
YD	Composite submarine class - Yankee, Delta

UNCLASSIFIED

Table 3-6. ORDER DESCRIPTIONS

Item 06 SUBMARINE ASSIGNMENT

Use: Directs submarine to assume a specified mission and to proceed via a particular route to a specified region. This order breaks all previously established coordination and terminates any existing assignment orders.

Order Format:

				PIM			STATION	
P	UNIT	M	S	S LAT	S LONG	SP	S LAT	S LONG

Order Elements:

Element	Option
P	Enter precedence O, E, F (see Table 3-7).
UNIT	Enter submarine unit identifier (See Table 3-7 for format).
M	P: Patrol ASW Mission. S: Surveillance ASW Mission. K: Strike Mission.
S	A: Area search is only option presently developed for undirected searches and is required option for strike assignment. B: Barrier search is not developed for undirected search and is not used for strike assignments.
PIM	Refer to Table 3-7.
STATION	Refer to Table 3-7.

Item 07 SUB DIRECTED ASSIGNMENT

Use: Directs submarine to search for a particular hostile submarine in response to available contact information. The assignment allows for either a barrier search (target is enroute) or an area search (target is on station) and permits specification of coordination against the contact. This order breaks all previously established coordination and terminates any existing assignment order.

Order Format:

						EST TGT INFO				
CN						CSE	SP	S LAT	S LONG	SPA	DAY	HRMN

P	UNIT	SP	S	BAR	Crd?

Table 3-6. ORDER DESCRIPTIONS (Continued)

Order Elements:

Element	Option
P	Enter precedence O, E, F (see Table 3-7).
UNIT	Enter submarine unit identifier (see Table 3-7 for format).
SP	Speed of submarine while enroute to the search location.
LAT, LONG	Estimated position of contact.
S	A: Area search. Most effective type against a patrolling contact. B: Barrier search. Most effective type against an enroute contact.
BAR	Barrier Width. Used only when barrier search type has been selected. Left blank for area search.
Crd?	Y: Coordination against the contact as implemented in the TAR logic desired. N: Coordination not desired.
CN	Contact number of the hostile submarine as found in the HOSTILE SUB CONTACT SUMMARY (Alpha menu item 02). Entry causes current target information for that contact to be displayed.
EST TGT INFO	Display of current target information for selected contact. Player may elect to revise the course, speed, or position data. If no changes are required, information is entered by depressing RETURN key. If revisions are to be made, the entire line (contact number, course, speed, position latitude, position longitude, probability area radius, and time) must be re-entered. The probability area radius and time items may not be changed.
CSE	Estimated course of contact.
SP	Estimated speed of contact.
SPA	Probability area radius. Radius of a circle having the same area as the two-sigma area of uncertainty reported with the contact.
DAY/HRMN	Time that EST TGT INFO was generated.

Table 3-6. ORDER DESCRIPTIONS (Continued)

Item 08 SUB ATTACK ORDER

Use: Directs submarine to attack currently engaged contact. If submarine is currently in trail approach, it will initiate attack approach upon attaining trail state. If submarine is currently in trail state, it will enter attack approach. If submarine is currently in attack approach or attack state, the order will be ignored. If submarine is no longer in contact or lacks appropriate ASW weapons, it will generate a CANNOT ATTACK report.

Order Format:

P UNIT CN NUC

Order Elements:

Element	Option
P	Enter precedence O, E, F (see Table 3-7).
UNIT	Enter submarine unit identifier (see Table 3-7 for format).
CN	Contact number of target as found in the SURF/SUB EMPLOYMENT SUMMARY (Alpha menu item 03) or HOSTILE SUB CONTACT SUMMARY (Alpha menu item 02). An invalid contact number will result in a CANNOT ATTACK report.
NUC	Y: Authority given for release of nuclear ASW weapons. N: Authority not given for release of nuclear ASW weapons.

Item 09 DELAYED ATTACK/STRIKE ORDER

Use: Initiates a multiple unit attack or strike action at a specified time. If order is for an attack action, all units engaged with a hostile unit and possessing appropriate weapons will initiate an attack. If order is for a strike action, all units with a strike mission that are on station and possess appropriate weapons will strike.

Order Format:

				if DELAYed		
P	UNIT	K	NUC	DAY	HRMN	

Table 3-6. ORDER DESCRIPTIONS (Continued)

Order Elements:

Element	Option
P	Enter precedence O, E, F (see Table 3-7).
UNIT	ALLUNITS (see Table 3-7).
K	Y: Order for a strike action. N: Order for an attack action.
NUC	Y: Authority given for release of nuclear weapons. N: Authority not given for release of nuclear weapons.
DAY/HRMN	Time attack/strike action is to occur, may be current game time or a future game time.

Item 10 NUCLEAR WEAPON RELEASE AUTHORITY

Use: Authorizes unit to use nuclear ASW weapons (submarines and VP streams) or nuclear strike missiles (submarines).

Order Format:

				if VP	
P	UNIT	A	K	AF	FLT

Order Elements:

Element	Option
P	Enter precedence O, E, F, (see Table 3-7).
UNIT	Enter submarine or VP stream unit identifier (see Table 3-7 for format).
A	Y: Authority given for release of nuclear ASW weapons. N: Authority not given for release of nuclear ASW weapons.
K	Y: Authority given for release of nuclear strike weapons. N: Authority not given for release of nuclear strike weapons.
AF	Enter 2-digit numeric airfield designator (see Table 3-7).
FLT	Enter 3-digit stream number (see Table 3-7).

Table 3-6. ORDER DESCRIPTIONS (Continued)

Item 11 DEFENSE CONDITION ORDER

Use: Assigns a specific Defense Condition (DEFCON) level to a particular submarine, VP airfield (and thereby eventually all associated VP streams), or to the Theater Commander (TC). Changes in DEFCON level affect such things as communications delay time for orders and reports, priority and precedence of reports and orders, various TARs, and trial, attack, and strike parameters.

Order Format:

P _UNIT_ DEFCON

Order Elements:

Element	Option
P	Enter precedence O, E, F (see Table 3-7).
UNIT	If submarine: Enter submarine unit identifier (see Table 3-7 for format). If VP airfield: Enter 8-character designator obtained by combining 6-character AIRFLD designator with 2-character AF designator (see Table 3-7). If Theater Commander: Enter 2-character designator TC.
DEFCON	L: Low H: High W: War

Item 12 SURTASS UNIT ASSIGNMENT

Use: Reassigns SURTASS unit to another position. Unit will go on station and conduct surveillance ASW at the last PIM point.

Order Format:

	PIM		
P _UNIT_	LAT	LONG	SP
	S--.-	S---.-	

Order Elements:

Element	Option
P	Enter precedence O, E, F (see Table 3-7).
UNIT	Enter SURTASS unit identifier (See Table 3-7 for format).
PIM	Refer to Table 3-7.

Table 3-6. ORDER DESCRIPTIONS (Continued)

Item 13 AIRCRAFT ASSIGNMENT

Use: Creates a VP stream to conduct either patrol or surveillance ASW. Since the airfield is prevented from generating a VP UNAVAILABLE report, the airfield's aircraft availability should be verified using the AIRFIELD STATUS report (Alpha Menu item 05) prior to generating this order. If no aircraft of the VP class are available at the airfield when this order is received, the order will be ignored.

Order Format:

							STATION			WEP LOAD			
P	TYPE	BASE	AF	M	S	NO	LAT	LONG	VP CLASS	1	2	3	4
							S .	S .					

Order Elements:

Element	Option
P	Enter precedence O, E, F (see Table 3-7).
TYPE	Enter 4-character VP stream type identifier (see Table 3-7).
BASE	Enter 4-character abbreviated airfield name (see Table 3-7).
AF	Enter 2-digit numeric airfield identifier (see Table 3-7).
M	P: Patrol ASW mission. S: Surveillance ASW mission.
S	A: Undirected area search. B: Undirected barrier search.
NO	Number of individual VP in the stream.
STATION	Refer to Table 3-7.
VP CLASS	Refer to Table 3-7.
WEP LOAD	Weapon loadout for each VP in stream. Implied weapon types are identified by WEPCAT parameter of CROSSREFTABLE of the particular class of VP aircraft.

Table 3-6. ORDER DESCRIPTIONS (Continued)

Item 14 AIRCRAFT DIRECTED-ASSIGNMENT

Use: Creates VP stream and directs it to search for a particular hostile submarine in response to available contact information. Assignment allows for either a barrier search (target is enroute) or an area search (target is on station) and permits specification of coordination against the contact. This order breaks all previously established coordination and terminates any existing assignment order. Since the airfield is prevented from generating a VP UNAVAILABLE report, the airfield's aircraft availability should be verified using the AIRFIELD STATUS report (Alpha Menu item 05) prior to generating this order. If no aircraft of the VP class are available at the airfield, the order will be ignored.

Order Format:

							EST TGT INFO											
CN							CSE	SP	S	LAT	S	LONG	SPA	DAY	HRMN			
																WEP LOAD		
P	TYPE	BASE	AF	NO	Crd?	S	VP CLASS									1	2	3	4

Order Elements:

Element	Option
CN	Contact number of the hostile submarine as found in the HOSTILE SUB CONTACT SUMMARY (Alpha menu item 02). Entry causes current target information for that target to be displayed.
EST TGT INFO	Display of current target information for selected contact. Player may elect to revise the course, speed, or position data. If no changes are required, information is entered by depressing RETURN key. If revisions are to be made, the entire line (contact number, course, speed, position latitude, position longitude, probability are radius, and time) must be re-entered. The probability area radius and time items may not be changed.
CSE	Estimated course of contact.
SP	Estimated speed of contact.
LAT, LONG	Estimated position of contact.
SPA	Probability area radius. Radius of a circle having the same area as the two-sigma area of uncertainty reported with the contact.

Table 3-6. ORDER DESCRIPTIONS (Continued)

DAY/HRMN	Time that EST TGT INFO was generated.
P	Enter precedence O, E, F (see Table 3-7).
TYPE	Enter 4-character VP stream type identifier (see Table 3-7).
BASE	Enter 4-character abbreviated airfield name (see Table 3-7).
AF	Enter 2-digit numeric airfield identifier (see Table 3-7).
NO	Number of individual VP in the stream.
Crd?	Y: Coordination as implemented in the TARs is desired against the contact. N: Coordination not desired.
S	A: Area search (most effective type against a patrolling contact). B: Barrier search (most effective type against an enroute contact).
VP CLASS	Refer to Table 3-7.
WEP LOAD	Weapon loadout for each VP in stream. Implied weapons types are identified by WEPCAT parameter of CROSSREFTABLE of the particular class of aircraft.

Item 15 AIRCRAFT ATTACK ORDER

Use: Direct VP stream to attack currently engaged contact. If VP stream is currently in trail approach, it will initiate attack approach upon attaining trail state. If VP stream is currently in trail state, it will enter attack approach. If VP stream is currently in attack approach or attack state, the order will be ignored. If VP stream has lost contact or has a lack of appropriate ASW weapons, it will generate a CANNOT ATTACK report.

Order Format:

P TYPE BASE AF FLT CN NUC

Order Elements:

Element	Option
P	Enter precedence O, E, F (see Table 3-7).
TYPE	Enter 4-character VP stream type identifier (see Table 3-7).

Table 3-6. ORDER DESCRIPTIONS (Continued)

BASE	Enter 4-character abbreviated airfield name (see Table 3-7).
AF	Enter 2-digit numerical airfield identifier (see Table 3-7).
FLT	Enter 3-digit stream number (see Table 3-7).
CN	Contact number of target as found in the AIRCRAFT EMPLOYMENT SUMMARY (Alpha Menu item 04) or HOSTILE SUB CONTACT SUMMARY (Alpha Menu item 02). An invalid contact number will result in a CANNOT ATTACK report.
NUC	Y: Authority given for release of nuclear ASW weapons. N: Authority not given for release of nuclear ASW weapons.

Item 16 REQUEST AIRCRAFT TRANSFER

Use: Reassigns aircraft from one VP base to another. Since the airfield is prevented from generating a VP UNAVAILABLE report, the originating airfield's aircraft availability should be verified using the AIRFIELD STATUS report (Alpha Menu item 05) prior to generating this order. If no aircraft of the VP class are available at the airfield when the order is received, the order will be ignored.

Order Format:

P VP CLASS_____ NO from AF to AF

Order Elements:

Element	Option
P	Enter precedence O, E, F (see Table 3-7).
VP CLASS	Refer to Table 3-7.
NO	Number of aircraft to be transferred.
AF	Enter 2-digit numerical airfield identifier (see Table 3-7). (From AF denotes originating airfield; to AF denotes receiving airfield.)

Item 17 VP BREAK-STREAM ORDER

Use: Breaks a particular VP stream prior to its natural termination upon exhausting the VP stream count.

Table 3-6. ORDER DESCRIPTIONS (Continued)

Order Format:

P TYPE BASE AF FLT

Order Elements:

Element	Option
P	Enter precedence O, E, F (see Table 3-7).
TYPE	Enter 4-character VP stream type identifier (see Table 3-7).
BASE	Enter 4-character abbreviated airfield name (see Table 3-7).
AF	Enter 2-digit numeric airfield identifier (see Table 3-7).
FLT	Enter 3-digit stream number (see Table 3-7).

Item 18 SUB REPAIR/RELOAD ORDER

Use: Directs submarine to proceed via a particular route to a specified position where it will be repaired and/or rearmed.

Order Format:

			PIM			WEP LOAD
P	UNIT	M	LAT	LONG	SP	1 2 3 4 5

Order Elements:

Element	Option
P	Enter precedence O, E, F (see Table 3-7).
UNIT	Enter submarine unit identifier (see Table 3-7 for format).
M	R: Submarine is assigned to repair and reload mission. A: Submarine is assigned to reload/re-arm mission.
PIM	Refer to Table 3-7.
WEP LOAD	Weapons loadout for submarine. Implied weapon types are identified by WEPCAT parameter in the submarine class CROSSREFTABLE.

AD-A097 743 JOHNS HOPKINS UNIV LAUREL MD APPLIED PHYSICS LAB F/G 15/6
NAVAL NUCLEAR WARFARE SIMULATION OPERATOR'S MANUAL.(U)
MAR 81 N K BROWN, R R GUENTHER, P A JAFFRAY N00024-81-C-5301

UNCLASSIFIED NL

Table 3-6. ORDER DESCRIPTIONS (Continued)

Item 19 SUB/AIRCRAFT COORDINATION

Use: Directs a unit to engage in coordinated operations as determined by the unit's TARs when the unit detects a specified contact that is engaged by one or more friendly units that also have coordinated assignments against the contact. The unit may be assigned coordinated operations against any number of contacts and any number of units may be assigned to a particular contact.

Order Format:

```
                                  if VP
P __UNIT__ CN AF FLT
```

Order Elements:

Element	Option
P	Enter precedence O, E, F (see Table 3-7).
UNIT	If submarine: Enter unit identifier (see Table 3-7 for format). If VP stream: 8-character designator obtained by combining 4-character TYPE designator with 4-character Base designator. Refer to Table 3-7.
CN	Contact number of hostile submarine as found in the HOSTILE SUB CONTACT SUMMARY (Alpha Menu item 02).
AF	Enter 2-digit numeric airfield identifier (see Table 3-7).
FLT	Enter 3-digit stream number (see Table 3-7).

Table 3-7. STANDARD ORDER ELEMENTS

Element	Entry
AF (VP stream airfield)	The 2-digit equivalent to the 4-character BASE as found in the AIRFIELD STATUS (Alpha Menu item 05) or AIRFIELD DISPLAY (Graphic Menu item F).
BASE (VP stream base)	The 4-character abbreviated name of associated airfield as found in the AIRFIELD STATUS (Alpha Menu item 05) or AIRFIELD DISPLAY (Graphic Menu item F).
FLT (VP stream flight number)	The 3-digit identifier for a VP stream created during AIRCRAFT ASSIGNMENT or AIRCRAFT DIRECTED-ASSIGNMENT orders and found in the AIRCRAFT EMPLOYMENT SUMMARY (Alpha Menu item 04), HOSTILE SUB CONTACT SUMMARY (Alpha Menu item 02) and the Graphic SITUATION MAP DISPLAY.
P (precedence)	Specifies urgency of an order. Is primary factor in determining simulated communication delay time between Theater Commander and his operating units. Options are: O: Operational immediate F: Flash E: Emergency
PIM (position and intended movement)	Specifies by a sequence of points and speeds, the route the unit is to follow. May consist of up to six points with the last point being the entry point into the station area or the point at which the unit will stop and perform its mission. Entry consists of three fields as follows: LAT - Latitude of point to tenth of a degree with sign designating hemisphere (+ = Northern; - = Southern) LONG - Longitude of point to tenth of a degree with sign designating hemisphere (+ = Eastern; - = Western). SP - Speed unit is to assume to reach next point. Must be a non-zero speed for all points except last point of a SUB REPAIR/RELOAD ORDER or a SURTASS UNIT ASSIGNMENT.

Table 3-7. STANDARD ORDER ELEMENTS (Continued)

Element	Entry
STATION	Describes the patrol or search station as either a barrier or an area and defines the region with appropriate latitude and longitude coordinates. A barrier requires the center and one end point to be specified. An area requires the interior and four vertex points to be specified. The points are entered in a center/interior then vertex point(s) order in the appropriate fields: LAT - Latitude of point to tenth of a degree with sign designating hemisphere (+ = Northern; - = Southern). LONG - Longitude of point to tenth of a degree with sign designating hemisphere (+ = Eastern; - = Western).
TYPE	The 4-character identifier of a VP stream type initially entered during AIRCRAFT ASSIGNMENT or AIRCRAFT DIRECTED-ASSIGNMENT orders and found in the AIRCRAFT EMPLOYMENT SUMMARY (Alpha Menu item 04).
UNIT	Submarine/SURTASS units: The 8-character unit hull number identifier created at initialization and found in the SURF/SUB EMPLOYMENT SUMMARY (Alpha Menu item 03). VP Airfield: The 8-character identifier obtained by combining 6-character AIRFLD with 2-character AF. To ensure resulting field is 8-characters long, single digit values must be preceded by a zero. VP Stream: The 8-character identifier obtained by combining 4-character TYPE with 4-character BASE. All Units: "ALLUNITS" directs order to all units capable of carrying out the order.
VP CLASS	Aircraft type identifier found in CLASS listing of CROSSREFTABLE. Entry must be made exactly as listed in CROSSREFTABLE (without apostrophes) or order will be ignored.

Table 3-8. GRAPHIC DISPLAY SYMBOLS

BLUE DISPLAY		RED DISPLAY	
UNITS	SYMBOL	UNITS	SYMBOL
SSN 594	(1)	SSN E-1, N	[.]
SSN 637	(2)	SSN V, A, Y	[1]
SSN 688	(3)	SS	[2]
Other NUC SSN	(4)	SSB G-I, SSB G-II, SSBN H-II	[3]
SSN 594, 637, 688 with CM	(5)	SSBN Y, SSB G-IV	[4]
SSBN 593, 608 w/POLARIS A3	(6)	SSBN D-I, D-II, G-III, H-III	[5]
SSBN 616, 627, 640 w/POSEIDON C3	(7)	SSBN D-III	[6]
SSBN 640, 726 w/TRIDENT C4	(8)	SSGN C, P	[7]
Any SS	(9)	SSGN E-II	[8]
P3-A/B	(1)	SSG J, W	[9]
P3-C	(2)	SURTASS x	[1]
P3-C (Update)	(3)	SURTASS y	[2]
SURTASS	①	M1	[1]
Interim SURTASS	②	M2	[2]
		M3	[3]
CONTACTS	SYMBOL	CONTACTS	SYMBOL
CVAP	1	Nuclear Sub	1
HEN	2	Diesel Sub	2
YD	3		
Diesel	4		
MISCELLANEOUS	SYMBOL	MISCELLANEOUS	SYMBOL
Airfields	⊕	Airfields	⊕
Sub Reload/Repair Site	⊞	Sub Reload/Repair Site	⊞
Surveillance Sites	✳	Surveillance Sites	✳
PIM End	X	PIM End	X
Point in Track History	+	Point in Track History	+
Target Location		Target Location	
C^2 Site	⌂	C^2 Site	☆
Communications Site	⊕	Communications Site	⊕

Table 3-9. GRAPHIC REPORTS

Item P BLACKBOARD PIM CONSTRUCTION

Use: Primarily used for Position and Intended Movement (PIM) construction. Also used to display a PIM for input on the alphanumeric terminal in an undirected assignment order and to display latitude and longitude of a particular point on the map.

Operation:

1. Using joystick construct PIM of up to six points (depress joystick button to enter points).
2. Observe latitude/longitude display of each point on monitor.
3. After all points have been entered, move cursor to far right and depress joystick button.
4. Observe prompt asking if player desires to input patrol pattern.
5. If no patrol pattern is desired, enter 0
6. If a patrol pattern is desired, enter 1 and use joystick to construct a patrol pattern of up to four points.
7. Return to Graphics menu by entering 9

Item T UNIT PIM DISPLAY

Use: Displays the current ordered PIM for a particular unit.

Operation:

1. Verify a PIM for that unit has been entered in a previous undirected assignment order.
2. Observe prompt for a unit number.
3. Enter unit number. For a sub or surface unit, the exact alphanumeric designator shown in the EVENT SUMMARY REPORT including trailing blanks must be entered. For A VP stream, enter either the 8-character unit name or the VP stream number.
4. Verify displayed unit designator is correct.
5. If unit designator is not correct, depress RETURN key and return to Step 2.
6. If designator is correct, enter 9
7. If an error message is displayed, unit designator is invalid. Go to Step 9
8. Observe PIM display.
9. Return to Graphics menu by entering 9.

Item S SUB/SURF POSITION DISPLAY

Use: Displays latest reported position all friendly submarines and ships.

Table 3-9. GRAPHIC REPORTS (Continued)

Operation:

1. Observe COMPLETED . . . HIT 9 TO RETURN is printed at bottom when display is complete.
2. Return to Graphics menu by entering 9.

Item A AIRCRAFT POSITION DISPLAY

Use: Displays latest reported position of all Aircraft. Display is available to BLUE team only.

Operation:

1. Observe COMPLETED . . . HIT 9 TO RETURN is printed at bottom when display is complete.
2. Return to Graphics menu by entering 9.

Item F AIRFIELD POSITION DISPLAY

Use: Displays position of all airfields. Airfields are identified by their mnemonic name and airfield number. Display is available to BLUE team only.

Operation:

1. Observe display.
2. Return to Graphics menu by entering 9.

Item D DISTANCE FUNCTION

Use: Displays the great circle distance in nautical miles between two chosen points on the map.

Operation:

1. Using joystick and joystick button, select two points on the map.
2. Observe distance display beneath the map.
3. Return to Graphics menu by depressing joystick button.

Table 3-10. ERROR RECOVERY

NOTE

If encountered error is not listed or recovery steps do not correct error, contact APL NNWS Programming Personnel.

1. ERROR: Lack of Response to Alphanumeric Terminal Operations

   RECOVERY:
   a. At affected Alphanumeric Terminal, depress NO SCROLL key and repeat operation.
   b. If still no response depress NO SCROLL key. At Umpire's Alphanumeric Terminal depress RETURN key.
   c. If Umpire's Alphanumeric Terminal does not respond to RETURN, proceed to error 2.
   d. At Operator Terminal, depress RETURN key.
   e. If a message relating to Alphanumeric Terminal operation is printed, enter RESUME [B or R] ALPHA and repeat original operation.
   f. If no message is printed, enter TIM and observe Time printout. If printout occurs, contact NNWS APL Programming Personnel.
   g. If Time printout does not occur, proceed to error 2.

2. ERROR: Lack of response to any commands

   RECOVERY:
   a. At Operator Terminal, verify PAPER OUT indicator is out and paper supply stock is at least 1-inch thick.
   b. If required, load paper in accordance with NNWS Operator Procedure 3.6.
   c. If paper supply is adequate, enter TIM and observe Time printout. If printout occurs, contact NNWS APL Programming Personnel.
   d. If Time printout does not occur, reload operating system software in accordance with NNWS Operator Procedure 3.1 step 9.

3. ERROR: Lack of Response to orders transmission (orders have been transmitted but new reports have not been received within 5 minutes).

   RECOVERY:
   a. If a data communication error message is displayed on Umpire's Alphanumeric Terminal, proceed to error 9.
   b. At Operator Terminal, depress RETURN key.
   c. At Operator Terminal, enter TIM and observe Time printout. If Time printout does not occur, re-load operating system software in accordance with NNWS Operator Procedure 3.1 step 9.
   d. Enter PIP DM1:BLURPT.DAT/LI and observe BLURPT.DAT file printout.
   e. If the BLURPT.DAT file created after orders were transmitted (compare time of creation to time of transmission) has a non-zero length, the model is functioning correctly but is encountering delays or communication errors. Wait

Table 3-10. ERROR RECOVERY (Continued)

for report of transmission completion or failure. If a data communication error message is displayed on Umpire's Alphanumeric Terminal, proceed to error 9.

f. In the BLURPT.DAT file is zero length (empty), the model may be looping. If no message is received within 5 minutes send a break signal to terminate the models execution by performing the following on the EIA RS232 Breakout Box connected between the DL 11/E and the Bell 209A modem):

(1) Move slide switch for pin 2 to OFF.
(2) If not already in place, connect jumper wire to pin 20.
(3) Touch free end of jumper wire to the pin 2 closest to red lights.
(4) Verify light for pin 2 flickers.
(5) Retract wire and return pin 2 slide switch to ON.
(6) If communication fails or model execution is aborted, perform Abnormal Shutdown in accordance with NNWS Operator Procedure 3.4 Part 2 step 4.

5. ERROR: Order generator error

RECOVERY: a. At Operator Terminal, enter
PIP [BLU or RED] ORD.DAT=UMPINT.DAT
b. Verify RED (BLUE) Alphanumeric Terminal displays Alpha Menu.
c. If Alpha Menu is not displayed, enter
RESUME [B or R] ALPHA
d. Re-enter affected player's orders.

6. ERROR: Graphic Scope situation map error

RECOVERY: a. At Operator Terminal, enter RES [SITBL or SITRD]
b. If error is not corrected, enter RUN [SITBL or SITRD] (display will not be reinstated until after next REPORTS RECEIVED message).

7. ERROR: Graphic Map blanks during Copy operation.

RECOVERY: At Printer/Plotter, open Highed Front Panel and depress RESET pushbutton.

8. ERROR: Operator Terminal FORTRAN error messages printed in the following format:

task name--EXITING DUE TO ERROR number
IN subroutine AT offset
FROM subroutine AT offset

Table 3-10. ERROR RECOVERY (Continued)

RECOVERY: Refer to appropriate error number listed below. If printed error number is not listed, refer to IAS/RSX FORTRAN IV User's Guide (DEC publication number AA-1963D-TC).

ERROR NUMBER	RECOVERY
24	End-of-file During Read error usually occurs during the processing of reports and is usually due to an empty unit file created by a prior task failure. To recover, locate the failing unit by running the RED or BLUE unit summary program. Delete the current copy of the corresponding unit file.
30	To receover from Open File error, check available file space. Run FILEUNLK procedure.
41	No FCS Buffer Room error usually occurs during order generation. To recover, re-initiate the orders tasks.
64	Input Conversion error is usually caused by an invalid character in the received reports. To recover, attempt to locate the failing report using the PIP utility program. If failing report is found, halt and restart the simulation. If failing report cannot be found or error recurs after restart, notify APL NNWS Programming Personnel.

9. ERROR: Data Communication Error Messages displayed on Umpire's Alphanumeric Terminal.

RECOVERY: Refer to appropriate CC number listed below. If printed CC number is not listed, contact APL NNWS Programming Personnel.

CC NUMBER	RECOVERY
1	The Non-recoverable Transmission Error could be a result of electromagnetic interference to the telephone trunk connecting the two computers. To recover, conduct normal shutdown and restart of NNWS and Minicomputer. Prior to re-initiating game play, thoroughly test communications by issuing simple TSO commands.
10	PDP Communications Software not initialized error is usually caused by a late CNTL Z entry (after 5 seconds) on Umpire's Alphanumeric Terminal. To recover, conduct normal shutdown and restart.

Table 3-10. ERROR RECOVERY (Continued)

10. ERROR: Disasters

RECOVERY: When conditions deteriorate beyond Operator's control, the Operator should conduct shutdown and restart procedures.

DISTRIBUTION LIST

ACTIVITY		COPY NO.
Office of the Chief of Naval Operations Department of the Navy Washington, D.C. 20350		
Attn:	OP-654D	1-2/40A
	OP-009	3/40A
	OP-02	4/40A
	OP-96	5/40A
	OP-981	6/40A
	OP-950	7/40A
	OP-953B1	8/40A
Naval Sea Systems Command Department of the Navy Washington, D.C. 20362		
Attn:	NSEA-03	9/40A
	NSEA-06J3	10/40A
	NSEA-643	11/40A
Office of the Chief of Naval Materiel Department of the Navy Washington, D.C. 20360		
Attn:	PM-23	12/40A
David W. Taylor Naval Ship Research and Development Center Bethesda, Maryland 20034		
Attn:	Code 1750, J. W. Sykes	13/40A
Center for War Gaming Naval War College Newport, Rhode Island 02840		
Attn:	LCDR John Corsey	14/40A
Commanding Officer Naval Underwater Systems Center Newport, Rhode Island 02840		
Attn:	Code 3602	15/40A

ACTIVITY	COPY NO.
Center for Naval Analyses 2000 N. Beauregard Alexandria, Virginia 22311	
Attn: Document Center	16/40A
The Johns Hopkins University Applied Physics Laboratory Johns Hopkins Road Laurel, Maryland 20810	
Attn: Ray Guenther	17/40A 45-48/40A
Joint Strategic Target Planning Staff Building 500 Offutt Air Force Base, Nebraska 68113	
Attn: War Gaming Division	18/40A
Studies Analysis and Gaming Agency The Joint Chiefs of Staff Washington, D.C. 20301	19/40A
Director Defense Nuclear Agency Washington, D.C. 20305	
Attn: Capt. D. W. West, RATN	20/40A
CDR. A. Hughes, NATD	21/40A
Technical Library Division	22/40A
U.S. Naval Post Graduate School Monterey, California 93940	
Attn: Center for War Gaming Department of Operations Research For: Prof. R. N. Forrest	23/40A
Institute for Defense Analyses 400 Army-Navy Drive Arlington, Virginia 22202	
Attn: Documents Acquisitions	24/40A

ACTIVITY	COPY NO.
U.S. Naval Surface Weapons Center White Oak Laboratory Silver Springs, Maryland 20910	
Attn: Technical Library & Information Services Branch	25/40A
R-14	26/40A
F-30	27/40A
Defense Advanced Research Projects Agency 1400 Wilson Boulevard Arlington, Virginia 22209	
Attn: Tactical Technology Office	28/40A
Commander Training Command Pacific San Diego, California 92147	29/40A
CINCLANT Norfolk, Virginia	
Attn: TCRP Mgr.	30/40A
CINCPAC Pearl Harbor, Hawaii	31/40A
Kaman Sciences Corporation P.O. Box 7463 Colorado Springs, Colorado 80933	
Attn: D. L. Choate, KSC Washington Operations	32/40A
W. J. Rudy	33/40A
TRW 7600 Colshire Drive McLean, Virginia 22101	
Attn: Mr. R. Anspach W2/B225	34/40A
Wagner Associates Station Square One Paoli, Pennsylvania 19301	
Attn: Mr. L. D. Stone	35/40A

ACTIVITY	COPY NO.
Automation Industries Vitro Laboratories 14000 Georgia Avenue Silver Spring, Maryland 20910	
Attn: Mr. N. Wolfson	36/40A
Anti-Submarine Warfare System Project Office Department of the Navy Washington, D.C. 20360	
Attn: Mr. R. Flum, Jr. ASW-115	37/40A
Defense Documentation Center Building 5 Cameron Station Alexandria, Virginia 22314	38-42/40A
BDM Corporation 7915 Jones Branch Road McLean, Virginia 22101	43-44/40A